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# Tactical Interaction and Integration :

# A Study in Warfare in the Hellenistic Period

# from Philip II to the Battle of Pydna

1993

Stephen Nutt

Contents:

## Preface

In many ways the Hellenistic period has been the poor relation as far as military studies have been concerned. Even quite comprehensive works on ancient warfare deal with this period in a relatively cursory manner, scholars concentrating on hoplite warfare or Roman military systems to the detriment of the Hellenistic period. To make matters worse a historiographical tradition exists which places the generals and armies of the period firmly in the shadow of Alexander the Great. Hellenistic warfare has therefore been seen as unimaginative and stereotypical, dominated by armies which used cumbersome and outmoded tactics, and which were led by generals outstanding only in their mediocrity.

This thesis is an attempt to redress the balance. I have sought to form a detailed picture of the Hellenistic military machine from the ancient sources and to test modern theories about its operation. The format of the thesis reflects these objectives. As my research progressed it soon became apparent that Hellenistic armies were not the cumbersome devices portrayed in many modern works and that they were composed of a series of interlocking tactical systems that could be viewed on a series of levels, the highest being the army itself. Hellenistic armies functioned as an all-arms combat force. Within each formation and category of troop-type, however, a series of organisational levels existed to enhance operational flexibility and effectiveness. I therefore decided that this complex system was best viewed combat arm by combat arm - phalanx, peltasts, *psiloi* and cavalry (the

divisions used by the ancient tactical writers) - as it was in this regard that each was most distinct from the others. Within each chapter I have discussed the origins, equipment, organisation and tactics of each troop-type, with a concluding section that links each into the overall structure of the military system. Finally, I have drawn the discussion together in a discussion of the military system as a whole in a concluding chapter.

I have concentrated on the strategic and tactical operations of the armies of the period because it is in action that military systems prove their worth. I have also attempted to show how the military system invented by Philip II, and used until the final defeat of Macedon by Rome at Pydna, was an effective socio-economic reaction to the military needs of the states of the period. It allowed the Hellenistic state to enlist large numbers of men into its army without the limitation of relying on a small section of society, as did, for example, the Classical Greek city-state.

Many people have given me the benefit of their knowledge and advice on various aspects of this thesis, and it would not be possible to mention them all. However, I would like to thank in particular my supervisor John Lazenby for his support, many helpful suggestions, criticisms of my arguments and for proof reading the final text, Dr. Jon Coulston for many hours of informed discussion on ancient military history and for also proof reading the text, and to Peter Callaghan for advice regarding the art evidence of the period. I am grateful to the library staffs of the Universities of Newcastle and Leeds, and of the Hellenic Society for much assistance in tracing elusive books and articles. Finally I would like to thank Hartley

Patterson and Nicholas Slope for their help it converting the final text to hard copy.

Colchester 1992.

## Chapter I - The *Sarisa* Phalanx (1)

### A) Introduction

Throughout the history of ancient Greece the most important component of an army was its heavy infantry, soldiers who fought shoulder-to-shoulder in a dense formation called a phalanx (2). In this chapter we will examine the differences between the phalanxes used by the armies of the Classical and Hellenistic periods. It will be shown that there were fundamental differences between the heavy infantry of the two periods, in style of fighting, equipment and sources of recruitment.

References to the phalanx can be found in Homer as much as in Polybios. Indeed so common was this style of fighting to the ancients that Polybios found it fit to quote the Iliad as illustration of the manner in which the phalanx of the third century fought,

"Shield was pressed close against shield, each man standing shoulder to shoulder;

Over their glittering helmets the horse-hair plumes touched as they nodded,

So tightly packed were the ranks..." (3).

Homer refers to warfare at least five hundred years before the time of Polybios. Despite this, the later historian feels no reluctance to use this archaic passage in a third century context.

The quote from Homer also has many points of similarity with Classical phalanx warfare. Thucydides tells us in detail about the events of the battle

of Delium, fought in 424 B.C.

"...for now the Boeotians, after Pagondas also hurriedly addressed them, sang the *paean* and began to move forward down the hill. The Athenians advanced against them and the armies met at the run. No contact was made between the extreme wings of either army, since both alike were held up by water courses in the way. But everywhere else the fighting was stubborn with shield pressed against shield," (4).

We can see from these three extracts that the ancients believed the phalanx held certain common characteristics that set it aside from other infantry. Broadly speaking the ancients believed a phalanx was a body of infantry drawn up shoulder-to- shoulder, who fought with hand-to-hand weapons and who would decide the outcome of a set-piece action (5). This ancient definition of the infantry phalanx is not, however, enough for our purposes. We need to identify the tactical differences between the phalanx of the Classical and the Hellenistic period. As the most obvious difference between the two is one of equipment we shall call the former the hoplite phalanx, the latter the *sarisa* phalanx.

Phalanx tactics were the basis of of Greek warfare from the seventh century onwards. Despite innovations in other fields, for example the development of light infantry and cavalry, the phalanx remained the arm of decision in war. In order to win a conventional war a state had to have an effective phalanx, all other arms being supplementary to this key fighting force. The details of the phalanx evolved as time went on and, as a result, so

did its relationship to the other parts of the army. We shall see that Classical hoplites were the main striking force of the armies of their day, whereas the Hellenistic phalanx provided a base from which other types of soldier could operate. One of the reasons for this shift in emphasis was, on the one hand, a change in weaponry and, on the other, change in the social group from which the infantry were drawn.

The phalanx of the Classical period was composed of soldiers equipped with an eight foot (2.4 M) thrusting spear, large shield and a short sword; they wore varying amounts of armour and were in general drawn from a quite wealthy peasant farmer class. The Hellenistic phalanx was, on the other hand, equipped with a small shield and a long spear; they wore little body armour and were generally drawn from the lower strata of society. As these broad differences effect our analysis of the *sarisa* phalanx, we must first examine the hoplites of the Classical world.

## B) The Hoplite Phalanx

### a) Introduction

The hoplite dominated the battlefields of the Classical world. Originating sometime in the seventh century this troop type came to be the most effective heavy infantryman in the Mediterranean area. By the close of the Classical period hoplites could be found in the armies of such divergent powers as Etruria and the Persian Empire. The hoplite and his style of fighting arose from a complex socio-economic system and the tactics he employed on the

battlefield, although effective for the time, were limited by this background (6).

b) Hoplite Equipment

The equipment carried by the individual hoplite largely defined the tactical limits of the Classical phalanx. Despite an argument by some commentators that armour was abandoned, the basic equipment and tactics of the hoplite phalanx remained constant throughout the period.

The most important piece of equipment was a large body- shield, the *hoplon* from which the hoplite possibly derived his name, though the usual Greek word for the shield was *aspis*. The shield was approximately three feet in diameter and weighed almost seven pounds. It was strapped to the soldier's forearm by an *porpax* and it was controlled by a handle at the rim, the *antilabe*. The weight of the shield was considered oppressive and in flight the shield was the first item of equipment to be discarded. As a result the loss of the shield in battle was regarded as a mark of cowardice. Hence the Spartan mother's instructions to her son to leave the battlefield with his shield or on it. On occasion the shield was discarded to allow other military tasks to be performed. Obviously the *aspis* was an unwieldy and sometimes unwelcome piece of the hoplite's equipment (7).

The tactics of the phalanx were largely dictated by the *aspis*. Although the *aspis* was a large shield the peculiar manner in which it was carried allowed it to cover only the left half of the soldier's body. This prompted the need for the hoplites to stand in a phalanx in order to receive full protection

and also caused a tendency for each man to shuffle to the right in order to squeeze ever more protection from his neighbour's shield. Two serious tactical side effects resulted from this peculiarity of the phalanx. Firstly, the phalanx as a whole would tend to 'drift' to the right, making the left flank vulnerable to envelopment. This is best illustrated by Thucydides' account of Mantinea, 418 B.C. Secondly, individuals would lose the mutual protection afforded by the phalanx should it be caused to break-up and disruption of the phalanx's formation became a major aim of the generals of the period. Furthermore, as the Classical period progressed the strategic pressures of warfare forced hoplites to operate in situations where a phalanx could not be formed, for example in broken terrain, with a resulting reduction of protection for the individual hoplite (8).

To reduce some of these disadvantages auxiliary forces such as peltasts and cavalry were introduced. These did not, however, have a substantial effect on the set-piece battle - through-out the period the only method to achieve decisive victory in war - in which the hoplite reigned supreme. Therefore the disadvantages of the *aspis* were considered acceptable to the soldiers of the period.

The *aspis* also provided the primary offensive weapon of the hoplite. Frontally the phalanx was nearly invulnerable to the weapons of the time, both hand held and missile. The phalanx had to be first disordered to kill large numbers of enemy hoplites. The main tactic whereby this objective could be achieved was to push the enemy line over by brute force, literally

shield pressed on shield. Most armies would attempt this by rushing at the enemy at full speed, hitting the enemy line with maximum impetus. The Spartans, however, preferred to strike the enemy at the walk and gain victory through prolonged, disciplined pressure. Owing to their generally superior training only the Spartans, and we can presume certain other picked forces, could gain victory by the latter method (9).

After the *aspis* the most important defensive item of equipment was the corslet. The protection this gave the hoplite's body varied in degree depending on which part of the Classical period is under examination. Indeed a general theory, first proposed by Chrimes but not accepted by all, exists that as the Classical period went on body armour got gradually lighter, with unarmoured hoplites being the standard type by the period of the Corinthian War.

We can be sure that the earliest hoplites wore a bronze back and breast plate, known as the bell cuirass. In addition the earliest types of hoplite had protection for the upper parts of the limbs. Some time around the period of the Persian War the linen cuirass, or *linothorax*, came into vogue. This item of equipment is profusely illustrated in art, especially pottery. Some examples show the addition of metallic scales to vital body areas, such as the abdomen; for the most part, however, this armour consisted only of multiple layers of linen or leather. Finally, if one accepts the Chrimes theory, the later hoplite would wear only his *chiton*, relying alone on his *aspis* and the mutual protection afforded by the phalanx (10).

The early stages of hoplite armour evolution are, therefore, easy to follow. The initial stages of hoplite development saw a relatively heavily armed soldier. As the mutual support afforded by the phalanx became clear metal armour was discarded and eventually the largely non-metalic *linothorax* was adopted. Chrimes' theory would have this trend continue until all body armour was discarded, the shield wall of the phalanx making armour superfluous. Chrimes also argued that an evolution in tactics took place, largely under Spartan influence, that required a lighter, faster hoplite and prompted the adoption of a more manoeuvrable phalanx. This tactical motive for a gradual reduction in armour is, however, based on a general misconception of warfare, that weight of equipment is directly related to tactical role. Hoplites were, by later standards, relatively lightly equipped, their entire panoply coming to approximately fourteen pounds. Furthermore ancient battles did not last for prolonged periods of time; soldiers would have, as a result, suffered more from the fatigue effects of the psychological stresses of combat than the weight of their armour (11). It is difficult, therefore, to accept that tactics dictated a lightening of armour later in the Classical period.

Another factor mitigating against Chrimes' theory is the fact that the hoplite generally supplied his own equipment. We cannot, as a result, assume any type of standardisation in army equipment. One would assume that each individual would wear what he could afford. An exception to this is the use of state arsenals by certain city-states as the period went on. In particular the

Spartans are known to have used state supplied equipment for their citizen and *helot* hoplites. The Chrimes theory may, therefore be more logical in regard to Spartan forces (12).

Finally in no way is the Chrimes theory supported conclusively by art or literary evidence. Many of the supporting examples she uses are unsatisfactory when compared to the quite voluminous evidence for the continued use of armour (13).

The wider socio-economic implications mitigate against a reduction in armour. Logic demands that a reduction in armour would be motivated by a desire to place more men in the field, for we have already seen how such a lightening of equipment would have had little effect on mobility. The problem with the hoplite is that social class defined who would take the field in the phalanx. On very few occasions were the poorer elements of Greek society deployed as hoplites (14).

Other protection was provided by a helmet, of which there were several designs. These were made of beaten bronze and were usually topped with large horse-hair crests. One type, the *pilos*, is included in the Chrimes theory, evidence being cited to show that it was a Spartan peculiarity and made of felt, but once again this is controversial (15). Finally the hoplite's protective equipment was completed by greaves; made of springy bronze these covered the lower leg (16).

The hoplite's main offensive weapon was a spear some six to nine feet long. The spear was used in two ways, an over- and an underarm thrust, the

former apparently being preferred in the compact ranks of the phalanx. Our evidence indicates that the spear would only become important once the phalanx broke-up (17).

The hoplite also carried a sword, but this was very much a secondary weapon. It would appear that hoplites would prefer to fight on with the butt-spike of their spear should it become broken rather than resort to drawing their sword. It is notable that the most highly trained hoplites, the Spartans, carried a sword that was little more than a dagger (18).

This equipment cost a considerable amount of money and only a minority could afford to equip themselves for fighting in the phalanx. As the period progressed the hoplites became a distinct social group within the city-state, often making claim to special political rights and becoming jealous of the privileges that went with their position; it was within the capacity of the city-state to organise a state funded militia and expand their military capacity, but few examples exist of this happening and most city- states prefered a middle-class manpower base for their armies.

c) <u>The Tactics of the Hoplite Phalanx</u>

The tactics of the hoplite phalanx were relatively stereotyped in the early and middle part of the Classical period. It was only after and during the Peloponnesian War that new troop types, and hence innovations, were introduced to the battlefield and even then the basic principle of hoplite warfare remained. Essentially victory could only be achieved by pushing the

enemy phalanx until it became disordered and broke in flight, and for ease of reference we shall call this tactic by its Greek name, the *othismos* or the "shoving".

In Classical battles the two phalanxes deployed on as flat a piece of land as possible, then both advanced. Once at close quarters each would push shield-to-shield and attempt to push the other back and ultimately over. The fight was like one huge rugby scrum. Only once the enemy shield wall had been broken did the opportunity come to inflict substantial casualties on the enemy. As a result most armies would run once their phalanx had broken up. Indeed this became so common that it was considered unsporting for losers to reform to try their luck again (19).

Cawkwell offered a modified version of this scenario. He argued that the hoplite battle fell into two distinct phases. Firstly, the two phalanxes advanced until the two lines were almost in contact. Here they halted to engage in individual fighting. Only when this had progressed for some way would the hoplites finally pack together for the *othismos* (20). The main evidence against Cawkwell's theory comes from Plato's dialogue 'Laches', where Laches asks Socrates if it would be worthwhile to pay a professional trainer to teach his son the finer points of hand-to-hand fighting - in the later Classical period many ex- Spartan trained soldiers provided this service to the Greek social *élite*. Socrates advises against such a course of action; he replies that the hoplite only needed individual skill-at-arms during the pursuit phases of a battle. Either a fleeing soldier might be forced to turn to face a

pursuer or vice-versa, in which case the compact phalanx has broken. At no point does Plato mention an initial phase such as that suggested by Cawkwell (21).

This phase of individual combat before the phalanxes clashed proper is impractical when you consider that both sides might be closing at some considerable speed. At normal human jogging speed a phalanx, some eight deep, might be assumed to cover its own depth in less that five seconds. We have evidence to show that the phalanx could, and often did, close at the run. For Cawkwell's theory to work the entire phalanx - both sides - would have to halt in order for his initial phase be allowed to run its course. This is not evident from the sources nor is it logical. We must, therefore, reject the phased battle theory and conclude that the objective of hoplite warfare was a violent and speedy *othismos*.

It is clear that this basic tactic could be modified by local conditions and outside factors. It is evident that often manoeuvre could be employed in an attempt to gain local dominance in weight. Most notably the Spartans with their system of organisation could move by sub-unit to disrupt the enemy's formation (22). However it would be difficult for most of the semi-trained city-state militias to do anything but strike the enemy in the time honoured fashion, frontally, and then resort to brute force for victory.

For the most part the battle did not progress far beyond a successful *othismos*. Once disordered and broken-up a phalanx usually took to flight. Very few armies had the discipline or training to reform. Furthermore there

was a tendency in Greek warfare to frown upon a vigorous pursuit. Firstly, the battle was won, and hence the victor gained any resulting political advantage, and excessive bloodshed became unnecessary. Secondly, Greek armies of the period were ill-equipped for pursuit. The proper arms for such a task - light or mounted troops - were either not readily available or badly handled. Further the nature of hoplite warfare mitigated against pursuit by the phalanx itself. In chasing a defeated enemy a victorious phalanx risked disorder itself and perhaps a reversal of the situation.

The basic tactical building block of the phalanx was the file. This was composed of a single line of soldiers of variable depth. A number of files were placed side by side to form the phalanx as a whole. The most important soldiers in the file were those at its front and its back. They maintained the alignment of the file, the soldiers in between simply making sure they were in line with the two ends. The phalanx could be turned about by reversing the positions of the two ends of the file by a process called counter-marching; note that each file rather than each individual hoplite made the about-turn. Furthermore this system meant that the phalanx could only wheel - not turn - to face the flank. This was normally impractical as the phalanx could be hundreds of metres in length and the line could only face to the side by wheeling sub-units and then manoeuvring each sub-unit in an attempt to reform the entire battle-line. We can only expect the Spartans to have had the ability to conduct such a complex manoeuvre. The flanks of the phalanx were, as a result, very vulnerable to envelopment (23).

Another tactical peculiarity was for the phalanx to 'drift' to the right during battle. This resulted from each individual hoplite edging behind the shield of his right hand comrade as the action progressed (see above p.5). The two phalanxes would move in a 'crablike' movement as they approached each other, the right wings of each formation eventually extending beyond the enemy left. This invited a flanking envelopment, which, as we have seen, was very difficult for the hoplite formation to deal with. Classical commanders realised the importance of the drift and sought to make maximum capital out of it (24).

The only general to successfully counter the 'shield drift' was the Theban Epaminondas. He and his largely Boeotian army defeated the recognised masters of hoplite warfare, the Spartans, twice, at the battles of Leuctra and Mantinea. At the former he used a tactic which has become known as the echeloned or oblique attack. He reinforced his left wing, deploying it fifty deep and with a front rank of *élite* troops, and he then refused his right wing. Epaminondas' achievement is all the more astounding when one remembers that he was outnumbered. This innovation needs investigation as it is seen as the basis of several *sarisaphoroi* formations in the Hellenistic period and many scholars argue that Philip II of Macedon learnt this ploy whilst a hostage in Thebes at the height of Epaminondas' power (25).

At Leuctra Epaminondas deployed contrary to the normal Classical practice. He placed his best troops on his left, opposite the *Spartiate* phalanx.

Normally this would have been very dangerous, the Spartans slowly outflanking and eventually defeating the best of the Boeotian force as a result of the inevitable shield drift. Epaminondas' tactic was to stop the drift by not committing the right flank of his army until the battle was well progressed and, hopefully, the *élite* of the Spartan army was in flight. The soldiers on the Boeotian right, who were inferior to the Thebans formed on the left, would not suffer the stress of close combat that prompted the drifting effect. Further their static position would lock the deeper Theban phalanx in position, preventing it drifting to the right.

Epaminondas' tactic worked: the fifty deep Theban phalanx, led by three-hundred strong *élite* Sacred Band, forced its way through the Spartan right, inflicting heavy casualties on and putting to flight the *Spartiatai* force opposing it. With the Spartans in retreat the main part of the Spartan allies took to their heels. The battle was won before the refused Boeotian right was committed to the action proper (26).

Despite the obvious advantages of this tactical ploy it was not copied by contemporary generals. It is argued, however, that the echeloned attack became part of the tactical doctrine of Philip and Alexander's Macedonians and to some extent their successors; furthermore, that the use of the deep phalanx by Epaminondas had a profound influence on Philip II's thinking as he introduced the *sarisa* phalanx.

Another development in the later Classical period was the introduction of small units of *élite* troops, hoplites trained to the same high standard as the

Spartan army. The citizen militias of the city-states were supplemented by an increasingly large number of mercenary soldiers as the period went on. Both these trends served to raise the professional quality of armies, especially in strategic areas such as scouting and combat in broken areas, but they had little influence in the set-piece, which remained the decisive event of war through-out the period.

To summarise, despite advances in technique and training the *othismos* of hoplites in a set-piece battle remained the typical feature of war in the period. For the most part the tactics of the Greek armies eclipsed by the Macedonians of Philip and Alexander were very similar to those which had fought in the Persian War some one hundred and fifty years earlier.

d) <u>The Socio-Economic Background of Hoplite Warfare</u>

The hoplites were only a small proportion of the total military population of Classical Greece and as a result the armies of the time were relatively small. The reasons for this are very important in an explanation of Macedon's rise to dominance, partially as a result of the introduction of the *sarisa* phalanx.

Hoplites were a product of the *polis* system and they were drawn from its middle-classes. These soldiers had to have enough income to equip themselves in the expensive hoplite panoply and maintain themselves on campaign. Some armies were subsidised from state funds but this was rare and provision was often inadequate. The lower classes of the *polis* could only

fight as hoplites if a substantial effort was made by the government to provide equipment. As a result the contribution to war by the lower classes was limited to the provision of light infantry or rowers for the fleet. This disparity of military responsibility resulted in the hoplite class assuming a key political position in all but those states which relied heavily on the sea for military power. The political power held by the hoplite classes is best illustrated by the social turmoil that struck most Greek states when hoplite tactics were adopted for the first time (27).

In most *poleis* the middle classes jealously guarded their monopoly of political power and this attitude in general counter- acted any progress towards the raising of state-funded hoplite armies drawn from all strata of society. As a result the manpower available to a *polis* was underused; only those states which relied on naval power, such as Athens, made proper use of the resources at their disposal. The figures available support this analysis: Perikles gives a total hoplite force of 29,000 available to Athens at the beginning of the Peloponnesian War, 13,000 at home, 16,000 in garrisons across the empire. Athens was at this time the most populous and richest of the cities of Greece. Sparta, her rival, suffered severely from a shortage of hoplites, a problem that began at the time of the Persian War and got progressively worse as the period went on. Even when alliances of city-states combined forces the result was hardly inspiring. At Delium, 424/3 B.C., the Boeotians and their allies massed only 7,000 hoplites on the battlefield. Overall army numbers in the Classical period compare very unfavourably

with those in the Hellenistic, even when we compare the armies of Greece proper, rather than a small city-state with a huge Hellenistic monarchy (28).

e) Conclusion

The hoplite was in his day the most effective close formation infantryman that had yet fought on the battlefields of the Mediterranean world. With success, hoplite warfare spread from Greece itself and by the end of the period the hoplite could be found fighting in all the major armies of the Mediterranean region. Even with the creation and rapid expansion of mercenary forces in the later Classical period, the establishment of large armies of hoplites was hindered by the manner in which these soldiers were recruited. The hoplite performed his military task extremely well whilst war remained a matter of low intensity operations, campaigns over small areas of ground and culminating in a series of set-piece battles. However once the geographical limits of war expanded and conflict was measured in years rather than months, the hoplite was found wanting.

The Peloponnesian War was the watershed; it forced the combatant states to fight across the length of the Balkan peninsula and to venture into Asia Minor and Sicily. The nature of the conflict, a land power versus a sea power, called for a protracted war of attrition that could not be decided by a single battle. The Greeks attempted to redress the situation by the creation of new types of soldier, mercenaries, light troops, state-equipped hoplites. They failed, however, to address the basic difficulties that reliance on a

middle-class militia placed on successful military operations. In many ways they could not overcome them because the hoplite system was rooted in the social fabric of their culture. It required a radical step forward such as that that had brought the hoplite into existence in the first place, with all the attendant socio-economic and political upheaval associated with such a change. As we shall see it took an external force to modify the military systems of the southern city-states, a change that destroyed the political and military predominance of the states of Old Greece.

C) The *Sarisa* Phalanx

a) Introduction

The *sarisa* phalanx was the base upon which the Hellenistic army rested. It was deployed in large numbers in all battles of the period. It did not solely dominate war; rather it was part of the combined arms doctrine that was the basis of Hellenistic warfare.

The *sarisaphoroi* of the Hellenistic period were very different from the hoplites of the previous era. These differences were not confined to equipment and tactics; the sociological background of the *sarisaphoroi* was radically different from the hoplite. The hoplite is rarely encountered in the Hellenistic period, so much so we must assume he must have been superseded in a relatively short span of time.

The *sarisaphoroi* stood shoulder-to-shoulder in a phalanx which was deeper than that used in the Classical period. Their primary weapon was the *sarisa*, a large spear wielded in both hands. The rank and file of the *sarisa* phalanx was drawn from the lower classes of society; they were Macedonian peasants, the settlers on royal land in the east or even freed slaves. Large numbers of soldiers could be raised in short periods of time to meet emergencies; for example in 217 B.C. the Ptolemies put a phalanx of native Egyptians into the field in under a year (29). With this shift in the burden of military responsibilty came a massive expansion in the size of armies and a change in the power structure of the Eastern Mediterranean. Even in Greece itself areas that were backwaters in the Classical period were rapidly thrust into the forefront of international politics, a notable example being the Achaean League of the northern Peloponnese (30).

These changes in the pattern of warfare were the result of a development in weapons and tactics, and they meant that far poorer soldiers could be deployed on the battlefield in large numbers. War also became more aggressive; casualties to soldiers and civilian alike rose in this period. The economic effects of war became more damaging. Further at the higher level of command a more professional attitude to tactical and strategic planning prevailed. This expansion in the scope of warfare swamped the city-states which had traditionally held sway in Greece and the Aegean; even the massive Persian Empire was dismembered as a result of the new style of war.

b) Equipment

The *sarisa* was the infantry weapon *par excellence* of the Hellenistic period. Its use was central to the tactics of the phalanx of the period.

The most striking feature of the *sarisa* was its length. Sources vary as to the exact length of the weapon, and it is clear that length varied from place to place and time to time. Polybios tells us that the *sarisa* was seven cubits long in his day, having been shortened from a length of eight cubits. Theophrastus recorded that the longest *sarisa* was twelve cubits long, whereas Asclepiodotus wrote that the shortest was ten cubits and that none exceeded twelve. Polyaenus, writing about Cleonymus of Sparta (circa 300 B.C.) stated that the *sarisa* reached a length of sixteen cubits. Arrian also gives the length of the *sarisa* as sixteen cubits, whereas Aelian quoted eight. We therefore have a weapon of varying length, from eight to sixteen cubits, or twelve to twenty-four feet. To confuse the issue further some scholars have argued that the size of the *sarisa* could differ from rank to rank within the same phalanx (31).

No hard and fast conclusion can be reached on this point, and ultimimately we must attribute these differences in *sarisai* lengths to regional or chronological variations, also perhaps different *sarisai* lengths would have been found within a single army. After all some Hellenistic phalanxes were very large formations; one might not expect an ancient state to be able to supply regulation lengths of weapon for all its soldiers. Alternatively individuals may have shortened their weapons for ease of use in battle or on

the march, perhaps without the permission of higher authorities. Of one thing, however, we can be certain, that the elaborate schemes laid by some scholars that differing lengths of *sarisai* were distributed to each rank was beyond the logistic capabilities of the states of the period.

The weight of the *sarisa* was not recorded by the ancients. Markle and Lammert attempted to estimate a figure. Markle reconstructed a *sarisa* based upon artifacts found at Vergina. He concluded that the Vergina example would have weighed fourteen and a half pounds if eighteen feet long, twelve if fifteen. He assumed that the wood used for the *sarisa* was cornel. Markle also reconstructed a hoplite spear from a smaller head found in the Vergina cist; he found it to be seven times lighter than the *sarisa*. Lammert estimated a figure of six kilograms (32).

The only hint of the cost of the *sarisa* comes from the Amphipolis Decree, dated to the reign of Philip V. The fine for the loss of a *sarisa* was three *obols*. The relative worth of this sum is dependent on whether one believes the fines to be for replacement of the weapon or simply as a punishment. As the fines for armour loss appear ridiculously low, it would appear the latter is the case (33).

The most important feature of the *sarisa* was its general unwieldiness and the fact that it had to be used in both hands. As a consequence the large *aspis* could not be carried by the *sarisaphoroi*; its large rim being incompatible with a two-handed weapon. Some authors have argued that our sources are incorrect on this basic point and that at least part of the phalanx used its

*sarisai* one-handed. A variation on this theory is a phalanx with each rank armed with a different length of spear, the forward ranks using one-handed hoplite spears. This would also allow the spear points of the phalanx to form a continuous row rather than being staggered. Despite the ingenuity of this theory no source makes a direct reference to such a practice. Most conclusive is Polybios' statement that the *sarisa* was held in both hands, using up six feet of the weapon, two between the user's hands, four behind (34).

As the *sarisa* prevented use of the *aspis* Hellenistic phalangites were equipped with a small target, similar to the Classical πέλτη, strapped to the left forearm. Asclepiodotus described the shield,

"The best shield for use in the phalanx is the Macedonian of bronze, eight palms in diameter and not too concave..." (35). It is difficult for us to detect this shield in art or literature and perhaps it is noteworthy that the author implies that the Macedonian shield is the best of several. Our study is further hindered by the use of imprecise terminology by our sources. The most common Greek word for shield is ἀσπίς; which is technically the large hoplite shield. Despite this, however, when authors use this word with regard to *sarisa*-armed troops in the Hellenistic period we must assume that they refer to the small target. However the word *pelte* was also used, a better word for the small shield carried by the *sarisaphoros*. Unfortunately the *pelte* was also used by a common troop type, the peltast, and on occasion this causes confusion as to the actual type of soldier being refered to (36).

Problems with terminology aside, at least two types of shield were in use

by the phalanx in the Hellenistic period. The first is the "bowl shield", a quite common representation in art. This type of shield is shown in the hands of phalangites and in isolation as trophies. The most effective example of the former is a belt- buckle from Pergamum which shows a phalanx advancing on barbarian, perhaps Galatian, infantry. Of the latter the balustrade reliefs from the Temple of Athena at Pergamum show piles of bowl shields, stacked inside one another. Other representations, such as the Boscoreale shield or those depicted in the tomb of Lyson and Callicrates are ambiguous, largely because they are depicted frontally with no indication of the characteristic "bowl" effect. The bowl shield is depicted with circular or star patterns on its face, often seen as characteristic of the type (37).

Broadly the bowl shield fitted the diameter suggested by Asclepiodotus, about twenty-four inches; but it can hardly be said to be "not too concave" as the mark of the bowl shield was its deep concave structure. As has been said, however, Asclepiodotus may merely be stating a preference for one type out of many. The Pergamum belt-buckle best illustrates how this shield might have been used. Two soldiers are shown shoulder to shoulder; they are obviously phalangites as they use long, two-handed spears. Unfortunately the spear of the foremost soldier appears to pass behind his shield in a most awkward fashion; perhaps, however, we can attribute this to error or artistic convention. Most notably the shields appear to rest on the soldier's left shoulder, perhaps supporting the weight of the shield and providing a firmer base upon which to receive the enemy's blows. We cannot tell how these

shields would be fixed to the forearm, as they surely must be in this example if the *sarisai* are to be wielded effectively. Perhaps an insert of some kind provided a flat area and allowed the soldier to get his entire forearm into the concave bowl. The shield is good for defence, its shape curving around and encompassing the left arm and shoulder of the phalangite and it may be that this is the reason why Macedonian phalangites brought their shields down off their shoulders at Pydna (38).

The only physical support we have for the Asclepiodotus shield are a cover from Pergamum and the Aemilius Paullus monument. The former is a bronze covering for the outside of a shield. It fits perfectly the description of Asclepiodotus. The second is the possibility that a phalangite is advancing with a small target. It is probable, however, that the shield is closer to the Classical Argive type, the *aspis*. The shield recorded by Asclepiodotus would, we conjecture, have been easier and perhaps lighter to carry, but it might not have offered as effective protection as the bowl-shield (39).

Finally Connolly has proposed that the Boeotian shield may have been used by *sarisa* armed troops at least in the early part of the period (40). The Boeotian shield is illustrated in art; it is an Argive shield, an *aspis*, with two semi-circular cuts at the edges. It is similar to the Persian *gerrha* and the Dipylon shield of the Late Geometric period, but as no actual example has to date been found, the Boeotian shield has been dismissed as an artistic creation based on a race memory from the Bronze Age type. Connolly suggests, however, that this type could have been used with the *sarisa*, the

indents overcoming the problems of using a two handed weapon with the large-rimmed Argive shield. He suggests that this shield might have been used by Epaminondas in order to equip his men with longer spears. Despite the ingenuity of the theory there is no evidence to support it, and this writer therefore rejects the Boeotian shield as a possible phalangite shield.

Despite the small shield used by the *sarisaphoroi*, the phalanx appears to have been remarkably well protected frontally. Livy quotes an example, at Atrax, of a phalanx holding a gate. The Romans tried to dislodge this formation with flights of *pila*, which simply bounced off the wall of shields, having little effect and killing few men. The *pilum* was an armour piercing javelin, capable of pinning overlapped shields together, and it is noteworthy that it was ineffective against a wall of shields carried by a formed phalanx (41). Further if *pila* were so ineffective, then how complete would be the protection against lighter missiles, such as arrows?

The most contentious item of equipment used by the phalanx of this period is body armour. Two broad schools of thought exist, those for and those against an armoured phalanx (42). In addition there is a middle ground whereby a partially armoured phalanx was deployed, the front ranks enjoying better protection than those in the rear. As for the materials used for armour, the bulk of our evidence seems to indicate that metal armour, at least, was rare in this period. Our main problem is that literature does not readily differentiate between the types of material used in armour and that art evidence is open to misinterpretation.

Many representations of Hellenistic infantry have survived (43). They are, however, difficult to use as evidence for the ordinary foot soldier. Tomb paintings, for socio-economic reasons, probably depict officers, their higher status and wealth allowing them to wear more expensive equipment. As such we must be wary of drawing wide ranging conclusions from these sources.

Armour from art evidence can be divided into two broad categories. Firstly, the linen cuirass, sometimes called the *linothorax* by the ancients, an example being the Lefkadia warrior (44). This type was used in the Classical period and has been discussed above (see p.7). Secondly, there was the muscled cuirass, often depicted on statuary of high ranking officers and this style lasted into the Roman Imperial period (45). The muscled cuirass was beaten out of two pieces of metal, the surface of the armour often being worked to depict a stylised muscled torso, hence its name. It is probable that this type was fitted to the individual when manufactured and was an extremely expensive item; it would not have been worn by the rank and file of the Hellenistic phalanx.

The *linothorax* is a common subject for military art of the period, and as such it is possible that this type of armour was in widespread use. It is possible that materials other than linen or leather were used in the construction of this armour. Pottery representations from the Classical period show that metallic scales could be applied to enhance protection of vital body regions and it is possible that metal plates could have been inserted beneath the outer layer of the armour. It is difficult to tell if this was done in the

Hellenistic period as most of our art evidence comes from sculpture, which would have been painted and of course this colouring has long since gone, leaving doubt as to the extent of any metal added to the basic linen foundation garment.

This problem has been exacerbated by the discovery of the 'Philip cuirass' at Vergina (46). This artifact was constructed from iron with extensive gold decoration. Its shape closely conforms to the *linothorax*. It has replicas of the fold-down shoulder guards and even the square flange at the back of the neck - these are present in the *linothorax* as a result of its fabric construction, but are not necessary for an iron cuirass. The armourer has obviously attempted to copy the *linothorax*. From our point of view the 'Philip cuirass' casts the shadow of doubt over the surviving uncoloured examples of the *linothorax*; were the Vergina example to be so depicted, we could not tell whether it was in fact constructed of iron or linen. Despite this we must remember that the 'Philip cuirass' belonged to a king and that very few, if any, comparable examples would have existed. *Linothorakes* may have been equipment exclusive to officers. We have already mentioned the Lefkadia warrior. He is wearing a *linothorax*, yet he is an officer - hence the distinctive red sash which indicated rank. Finally, much of our art evidence for this type derives from monuments such as the Pergamum reliefs where armour is shown as trophies. Such armour is in isolation and as such we cannot say with confidence that it is armour normally worn by the rank and file of the phalanx. These problems compound to make art evidence, at best,

problematic. We turn now to the surviving literary evidence for the use of armour by the phalanx of the Hellenistic period. The evidence falls into two main types, those which make general comments during accounts of battles and campaigns, and specific references to armament. It is difficult for us to use the former with any certainty, as the ancients were prone to use certain literary devices to describe an army in full battle order. An example is reference to an army that glittered with iron and bronze, no reference being made as to which equipment is reflecting the light. One must be aware that a Hellenistic phalanx would present the enemy with a line of polished shields, helmets, greaves, spearpoints, etc. - opportunity enough to dazzle the enemy without the addition of metal body-armour. This evidence is, therefore, at best problematic, at worst useless. Direct references to phalanx equipment are better for our purposes, but even here there are problems deriving from imprecise terminology or local variation. The earliest example of this type of evidence come from Polyaenus and it refers to the phalanx of Philip II (47). The author recorded that Philip would often take his men on route marches. They would carry helmet, greaves, *pelte*, *sarisai*, and all the rations and gear that they needed from day to day. No mention is made of body armour.

We have contradictory evidence for the use of armour by Alexander's army. Polyaenus tells us that the *thorax* was withdrawn from service and replaced by a *hemithorax* - presumably a piece of equipment covering the chest - in order to discourage flight (48). Curtius tells us that new armour was issued to the phalanx at the end of the Indian campaign, the old sets

being burned; this clearly indicates that Alexander's phalanx wore armour made of a combustible material (49). Further we have various references to the "heaviest of the phalanx", or the "lightest of the phalanx", implying that various parts of the phalanx may have carried heavier equipment than others (50). We must, however, recognise that many of these references apply to the phalanx in a strategic, rather than a tactical, situation. Nevertheless there is considerable evidence to support the opinion that the phalanx of Alexander was armoured.

A gap appears in the sources between Alexander's time and the late third/early second century B.C. The Achaean army was reformed by Philopoemen in 207 B.C. and our sources refer to equipping the new *sarisa* phalanx of the League with *thorakes*. This evidence for armoured Achaean *sarisaphoroi* is supported by two references, one in action and one at a review (51).

The reform of the Spartan phalanx by Cleomenes III, however, mentions nothing about body armour (52). Also the sources seem to indicate an unarmoured phalanx in service with the later Antigonid army. Livy recorded that the Romans had the better of the fighting in the Aoos Pass because the Macedonians lacked armour (53). The Amphipolis Decree makes mention of body armour, the *thorax* and the *hemithorax*, fines for loss of such equipment being two and one *drachmae* respectively, but it is clear from the inscription that only a proportion of the phalanx was equipped with these items and that the majority appear to have worn the κόθυβος. This item of equipment is

difficult to identify, but it appears to be a type of foundation garment for other armour. Alternatively it might have been some kind of leather armour like the σπολάς. Of importance is the fine for the *kotthybus*, only three *obols*, cheap enough to equip every soldier. The Amphipolis decree therefore appears to demonstrate that the main part of Philip V's phalanx was equipped with armour made of leather, with a small proportion wearing the heavier *thorakes* or *hemithorakes* (54).

The proportion of heavily armoured men in the phalanx is open to debate, but some scholars opt for a large number with the entire front rank armoured. This argument is based on an identification of the rank of *hegemon*. Some authors interprete this rank literally, the leader of the phalanx, the file opener. Others point to Egyptian evidence that shows the *hegemon* to be an officer of high rank, a unit or garrison commander. The former view is appealing; after all it would be economically and tactically sensible to armour the front rank, the part of the phalanx holding the post of most danger. However most of the evidence seems to point to the *hegemon* being a high ranking officer and, as such, a minority within the vast majority of the phalanx who would have worn leather armour of an indeterminate type (55).

Appian is the only writer who refers to the armour of the Seleucid phalanx. In the final stages of the battle of Magnesia he recorded that the Romans were afraid to approach the phalanx because it was so heavily equipped, but his statement is too general from which to draw any

conclusions (56).

The tacticians all agree that the phalanx was armoured, but we must be aware that they wrote general works on war, and thus one might expect the phalanx, which is described as the heaviest arm, to be armoured. The nature of these sources, however, make them useless for our overall survey (57).

Most of the evidence - including evidence from silence, always a dangerous tool - points to an unarmoured phalanx. Isolated formations were equipped with a variety of types of body-armour. For example, the reformed Achaean phalanx received the *thorax*, perhaps metal armour; of the phalanx of Philip V only the officers wore the *thorax* or *hemithorax*, the rank and file receiving only leather protection. In addition the phalangite would wear a helmet, greaves and would carry a side-arm. Many sources, literary and artistic, show these items in use. They were, however, secondary to the *sarisa* which is the most important single piece of equipment and which, as will be seen, affected the tactics used by the phalanx.

c) The Origins of the *Sarisa* Phalanx

The exact date for the introduction of the *sarisa* is open to interpretation, various arguments have been offered; ranging from the reign of Archelaos of Macedon (413-399 B.C.) to early in the reign of Alexander the Great. The majority of academic opinion supports a date of introduction sometime in the reign of Philip II of Macedon, but there is debate as to the exact year. Macedon was a poor, unsophisticated state when the *sarisa* phalanx was

created. The new formation gave Philip II's state a military advantage that allowed him to defeat the hoplite armies of the southern Greek city-states. It is therefore important that we examine the early years of this military innovation. The earliest proposed date is sometime in the reign of king Archelaos, 413-399 B.C., based on a statement of Thucydides, who says that Archelaos,

''...reorganised the cavalry, the arming of the infantry, and equipment in general.'' Geyer argued that this is a description of the introduction of the *sarisa* phalanx. There is, however, no other evidence to show that Macedon began to deploy an effective infantry force at this time. Rather, all surviving references to pre-Philipic infantry show quite the opposite, that Macedon had no native infantry that could stand in the line of battle. As a result, unless we assume Archelaos' introduction of the *sarisa* was a complete failure, we can reject Geyer's hypothesis (58).

The second possible period is the reign of Alexander II, 369- 368 B.C. Several fragments, notably that of Anaximenes cite by the grammarian Harpocration, refer to a reform of the Macedonian infantry in the reign of a king called Alexander and the introduction of *pezetairoi*. The phalanx of Alexander the Great is on occasion refered to by this title. Two theories have sprung from these fragments: firstly, that a special guard unit was created, perhaps a precursor of the famous *hypaspists*; secondly, that the *sarisa* was introduced, in addition, to at least part of the Macedonian infantry force. Lock especially supports the latter, quoting in addition references to the use

of the *sarisa* in this early period by the Thracians, close neighbours of the Macedonians. However again we have the problem that no recorded advance in the use of Macedonian infantry exists until Philip II's reign, prompting either a conclusion that the introduction of the *sarisa* had little effect on tactics or that this theory is incorrect. This writer would veer toward the latter conclusion (59).

The majority of modern historians support a date during the reign of Philip II, 359-336 B.C., although few are prepared to state exactly when this reform took place (60). Three general views predominate. The first, being the rather nebulous solution that the *sarisa* was introduced sometime in the reign of Philip, is the result of a marked lack of detailed evidence for this period. This view does not have the precision needed for our survey.

A second theory is that the *sarisa* was used for Macedonian infantry very late on in Philip's reign and that the cavalry received the weapon first. Thirdly, the *sarisa* was first used when Philip ascended to the throne, in 359 B.C., and that a new type of phalanx helped defeat Bardylis (a variation of this view is a reform just after the initial crisis faced by Macedon was overcome, time being too short for radical innovation before this point).

The second alternative was proposed by Markle (61). His argument is based on the paucity of evidence for the period and he argues that the *sarisa* was seen for the first time at the battle of Chaeronea in the hands of cavalrymen. The early reference from Diodorus, discussed in detail below, is rejected as insufficently precise by Markle. He concluded that the *sarisa* was

only issued very late in Philip's reign, or very early in Alexander's.

Markle's argument is weakened by his opinions about the equipment of Philip's infantry up to the introduction of the *sarisa*. He argues that the battle against Bardylis was fought with infantry typical of the earlier Macedonian kingdom, soldiers early evidence shows to be inferior. After 359 B.C. the wars against the southern Greek states were fought with an army of Macedonian hoplites, funding for their re-equipment being supplied by the substantial mineral wealth acquired during Philip's reign. Markle goes on to argue that this hoplite equipment was retained in store even after the introduction of the *sarisa* and that it was periodically re-issued to Alexander's phalanx for special missions.

Markle, however, presents a distorted picture. It was not a simple matter to equip an entire infantry force with the hoplite panoply; indeed - as we have seen - the Greek city-states had to develop a complex socio-economic system to support their hoplite armies. The *polis* simply did not exist in Macedon, forcing reliance on central goverment funding. Further the notion that Alexander's army could carry complete sets of new and entirely different equipment is difficult, if not impossible, to accept. Finally where Markle's theory is at its weakest is in the motive for infantry reform in the first place.

This work assumes that the motive behind the introduction of the *sarisa* was to create a solid native infantry phalanx, a force that had previously been absent from Macedonian warfare. The introduction of an army of native

hoplites would have solved this deficiency, but what of the short period before the reform, the battle against Bardylis? Diodorus' account of this battle implies that the Macedonians used a close-order infantry force, suggesting that some change in the tactical capabilities of Philip's infantry had occured even at this early stage (62). Markle also misinterprets Philip's use of wealth, which was consistent with normal Classical practice, whereby wealth could be exchanged for military muscle by hiring mercenaries. Philip did use mercenaries and he also spent vast sums on his diplomatic ventures; this would have amply strained his finances. Most important is the manner in which Markle argues that Philip created a force of hoplites, at considerable effort and expense we can assume, only to re-equip it with an untried weapon late in his reign! It would seen more logical for him to retain this hoplite army composed of the dominant infantry type of its time which if one accepts Markle, had beaten the Greeks consistently. Markle's theory, therefore, appears fatally flawed and it seems that logic forces us towards acceptance of the final alternative, the creation of the *sarisa* phalanx at the very beginning of Philip's reign.

This view is based on a statement of Diodorus dated to 359 B.C.,

"[Philip] having improved the organisation of his forces and equipped the men suitably with weapons of war, held constant manoeuvres under arms and competitive drills. Indeed he devised the compact order and equipment of the phalanx, imitating the close order fighting with overlapping shields of the warriors of Troy, he was the first to organise the Macedonian phalanx."

(63).

Diodorus describes a Macedonian infantry force radically different from that which preceded Philip. He refers generally to re-equipping the infantry and training them in a new battle drill but does not mention the *sarisa* directly. He is certain, however, that this reform was before the battle with Bardylis and that it produced the close-order infantry force that was the key to Macedonian victory. Philip won the battle by the offensive power of his cavalry, an arm in which Macedon was traditionally strong. His infantry were not asked to take a difficult role; they simply acted as a base for the mounted arm. However it is difficult to imagine the pre-*sarisa* armed Macedonian infantry accomplishing this mission. It is, therefore, entirely logical and consistent with known events that we place the introduction of the *sarisa* in 359 B.C. and that this reform was the first action of the new king's reign.

A second question which has interested scholars is the possibility of outside influences on the introduction of the *sarisa*. These range from a Thracian origin to the influence of Greek military innovators, such as Epaminondas and Iphicrates. This requires examination in order to determine, on the one hand, whether Philip II truly created the basis for Hellenistic warfare or on the other, whether he copied existing ideas.

The reforms of Iphicrates have often been cited as the precursor to *sarisa* warfare. Iphicrates had certain links with the Thracians and hence their style of warfare. He was a mercenary leader of some note and he appears to have been a major reformer of the peltast, in whose tactics he was a specialist.

Both Nepos and Diodorus record that Iphicrates made major changes to the equipment of the later Classical peltast, in particular lengthening the spear carried by these soldiers. This has prompted some scholars to view Iphicrates as a major influence on Philip II's *sarisa* phalanx. Such are the problems with this reform, however, that some have rejected it entirely. On the other hand some are of the view that the Iphicratean peltast was not the product of later Classical tactical thinking; rather he represented equipment that was normal for Thracian warriors of the period (see below pp.136ff) (64).

The Thracian connection is especially important when applied to Macedon. Pre-Philippic infantry would have been similiarly equipped to their Thracian neighbours. The Macedonian infantry encountered in Thucydides, for example, are clearly peltasts. Indeed the only major difference in equipment between *sarisaphoroi* and Thracian peltasts is the long spear; in particular the Hellenistic phalanx used a shield much like the *pelta*. Some authors have argued that the *sarisa*-armed infantryman existed in Thrace before Philip II came to the throne of Macedon and that he simply changed the tactical function of the troop-type to close- order infantryman. Lock takes this argument to its conclusion and cites evidence from Euripides which records that there were three types of Thracian infantry, peltasts, bowmen and javelinmen. Lock argued that the peltasts were sub-divided into those who fought with a javelin and those with the *sarisa*. He argued that Philip took an existing troop type and trained it to fight in an ordered, close packed line (65).

It is, however, difficult to accept the hypothesis that later Classical peltasts were armed with a *sarisa* like the one carried by the Hellenistic phalanx. The argument fails because of a misinterpretation of the relationship between weapons and tactics. A spear, a δόρυ, was a common weapon in the ancient world. It was, however, of varying lengths and clearly the Iphicratean peltast took the existing peltast spear and lengthened it. We cannot, however, easily determine the effect this might have had on tactics. Perhaps the longer spear was combined with javelins to give the peltasts - who were essentially missile troops at this time - a limited hand-to-hand capability. Alternatively some authors have argued that Iphicrates' intention was to convert his peltast force into hoplites, a troop-type more in demand in the Persian empire (66). We can safely assume that he did not rearm his soldiers with the two-handed *sarisa*. Literature attests to the unwieldiness of the *sarisa*, statements that have been supported by modern reconstructions (67). Had Iphicrates issued such a weapon to his men then they would have ceased to be peltasts; the heavy *sarisa* would have radically changed their battlefield role. The peltast fought as an individual; *sarisa*-armed troops, as our sources often say, were gravely disadvantaged when in such a situation. There is no indication from our sources that peltasts in the later Classical period changed their style of fighting. We must, therefore, conclude that Iphicrates might have introduced a long spear to his peltasts, but that he did not issue *sarisai*; if he had then he must have denied the peltast his skirmisher role and created a close-order phalanx. As such we must again give full credit to Philip II for the introduction of the heavy, clumsy infantry *sarisa* and the creation of a native

Macedonian phalanx.

There is also opinion that the tactics of the *sarisa* phalanx were influenced by the military innovations of Epaminondas of Thebes. Philip II spent some of his early years as a hostage in Thebes, right at the height of Theban military success' under Epaminondas. In particular it was during these years that Philip learnt of the deep Theban phalanx and the echeloned attack (68).

The most extreme form of this theory was proposed by Connolly. He argued that the Thebans introduced the *sarisa* in the time of Epaminondas in conjunction with the Dipylon style shield and that this innovation allowed them to use deep formations at Mantinea and Leuctra. This theory rests on an argument for the existence of a special Theban form of the *aspis*, which was examined and rejected above (see pages 24-5) for lack of evidence. From what we can tell from the sources for Epaminondas' wars the Thebans fought as normal hoplites and their deep formation simply added more weight to the *othismos*.

A related theory is that the deep Theban phalanx inspired Philip to deploy his new *sarisa*-armed infantry in equally deep formations. It is the case that later Hellenistic phalanxes were on occasion drawn up exceptionally deep, though none were ever as deep as the Theban formations at Leuctra and Mantinea. The evidence, however, from the period of Philip and Alexander, refers to shallow *sarisa* formations, a file of ten men, a *dekas*, or the use of an eight deep phalanx at the battle of Issus (69).

There is also an assumption that the attack in oblique order was a standard formation in Alexander's battles, an assumption that our evidence does not necessarily support. In most of Alexander's battles the phalanx was deployed in a straight line. It led with the right but did not carry out the special oblique attack used by Epaminondas. In addition we shall see that the *sarisa* phalanx was an essentially defensive formation, whereas the oblique attack is an offensive tactic. The Theban attacks at Leuctra and Mantinea were ferocious when compared with the typical phalanx tactics of the Hellenistic period. Finally, as we have seen, the real innovation of Epaminondas was to attack with his left wing leading, and on no occasion did Alexander use such a tactic.

As a result the writer is of the opinion that Philip II created a new style of fighting in 359 B.C., right at the beginning of his reign. The impact of the introduction of the *sarisa* and the creation of a large force of close-order infantry was immediately felt. Bardylis was expelled from Macedon and Philip's new army overcame the hoplite armies of the Greek city- states in a series of wars. Philip, by the simple use of a long two-handed pike, made the Macedonian peasant, - formerly a peltast, and a bad one at that - able to stand in the line of battle. He created a close-order infantry force which Macedon had never possessed before. Finally, this advance in equipment and tactics happened over a very short period of time.

d) Sociological Factors Effecting *Sarisa* Warfare

The social background of the hoplite class of Classical Greece has already been discussed and the conclusion reached that for the most part these soldiers were drawn from a narrow band of those who could afford the expensive panoply. As a result Classical hoplite armies tended to be small and, except for those powers who relied on sea power, the majority of the population contributed little to the defence of the state. The introduction of the *sarisa* into warfare allowed the state to tap the poorest elements of its population and, as a result, far larger armies were deployed in Hellenistic times than had ever been the case in Classical Greece.

After the victories of Philip and Alexander's Macedonians the tendency in Hellenistic Greece was for armies to reform to the Macedonian model and, as a result, achieve the phenomenal increase in military manpower that had propelled Macedon to the fore in Greek politics in such a short time. The first example of this is, of course, Macedon itself. Philip II introduced the *sarisa* in 359 B.C. He immediately repulsed Bardylis' invasion and soon successfully confronted and defeated the hoplite armies of the Greek city-states. This rapid change in Macedon's fortunes, until that point very much a pawn in international affairs, was due to clever diplomacy backed by the threat of military action. Philip created a steady, close-order infantry force from the Macedonian peasantry to supplement the already powerful native cavalry arm.

The phalanx of Philip II's time was drawn from the poorest elements of Macedonian society. No *polis* of any size existed in Macedonia and there was

not the middle class of the south to form a hoplite force. Macedonian society was polarized into a wealthy aristocracy and a poor peasant class. Alexander himself highlighted the humble origins of the phalanx,

"Philip found you a tribe of impoverished vagabonds, most of you dressed in skins, feeding a few sheep on the hills and fighting, feebly enough, to keep them from your neighbours - Thracians, Triballians and Illyrians. He gave you cloaks to wear instead of skins; he brought you down from the hills to the plains; he taught you how to fight on equal terms with the enemy on your borders, till you knew that your safety lay not in your mountain strongholds, but in your own valour." Philip in effect utilised what would have been the *thetes* of a Greek *polis* to form a large infantry force capable of standing in the line of battle (70).

This rearmament of large numbers of the poorer elements of society is echoed elsewhere. Both the Achaean League and Sparta under Cleomenes III created potent military forces in a relatively short time by the introduction of the *sarisa*. The centre of the Achaean League was along the northern coast of the Peloponnese, an area that was an inconsequential backwater in Classical times. Yet by the middle of the Hellenistic period the League was one of the foremost powers in Greece. Sparta is a similar example. By the reign of Cleomenes III Sparta had experienced an acute manpower crisis and as a result been reduced to a shadow of her former self. Cleomenes' introduction of *sarisa* tactics led to a quick reversal in Sparta's fortunes. So powerful did she become that intervention by Antigonid Macedonia itself was required to

crush Cleomenes' regime.

Both these states owed their success to a sudden increase in available military manpower. The Achaean League experienced an initial period of expansion under Aratus, but success was due to diplomacy rather than war. Indeed Plutarch tells us that at this time the entire League had only the military capacity equal to a single city. At Sellasia the Achaean contingent was very small, surprisingly so when one considers what was at stake for the League at this battle. In comparison, after the *sarisa* reform League armies are markedly expanded in size. It appears that a three tier military system was instigated with the final measure being a full levy of the League. When this was done immense numbers of soldiers could be fielded; one need look no further than Mantinea, 207 B.C., for proof. When one compares the leap in military power made by Philopoemen's Achaeans to the Macedonians of Philip II the parallel is inescapable (71).

The story was repeated in Cleomenes III's Sparta. In Classical times the hoplites of Sparta had dominated the battlefields of Greece, but by the mid-Hellenistic period the basis of the city's military power, the *Spartiartai* class, had dwindled to almost nothing. Cleomenes, following the lead of his predecessor Agis IV, expanded the military manpower of Sparta by drafting the entire male population into the army. So radical was his reform that even *helots* were given their freedom and allowed to serve in the ranks. Cleomenes achieved this resurgence of Spartan military power by the introduction of the *sarisa*. Sellasia, where the new army was defeated,

demonstrates the size of the phalanx that could be fielded with this system. Again the *sarisa* gave the state access to a larger proportion of its military manpower base than the military system used previously (72).

These three powers shared many socio-economic traits just before the introduction of the *sarisa* to their armies. There was a background of economic collapse or backwardness. The reform allowed large numbers of close-order infantry to be deployed; further the new *sarisa* phalanx proved itself capable of at least holding its ground against the enemy. These parallels are less obvious when we examine the eastern Hellenistic powers, which drew for the most part on Graeco-Macedonian settlers for their *sarisaphoroi.* These settlers are often seen as relatively wealthy, but there are comparable examples of mass mobilization to those cited above.

An example is the deployment of native Egyptians in large numbers by the Ptolemaic army just before the battle of Raphia in 217 B.C. The Ptolemaic dynasty had faced a continuous shortage of European military manpower since it first came to power in the later fourth century. For example Ptolemy I took 8,000 troops from the defeated army of Demetrius and settled them on Egyptian land in an effort to solve this problem (73). The equipping of the native Egyptian *machimoi* in 217 B.C. was a reaction to a severe military crisis that ensued once the Seleucids began active preparation for war against Egypt. The dynasty attempted to hire mercenaries to make up its manpower deficit, but was forced to bring Egyptians into the army by equipping them with the *sarisa.* The *sarisa* was a symbol of

Macedonian dominance in the East and until 217 B.C. the Hellenistic monarchs had been at pains to keep it out of native hands. The effects of reequipping the *machimoi* with the *sarisa* were in the short term successful; in the long term it caused native resentment and eventually open revolt. For our purpose it is enough to note that the reform allowed access to a previously untapped reservoir of manpower (74).

There was no similar event in the history of the Seleucid army. The history of the Seleucid army is very badly documented when one considers how active this dynasty was in the military field. There is great difficulty determining how the phalanx was recruited and the only general conclusion we can reach is that it was drawn from military settlers. However, when we do encounter the Seleucid phalanx it is always in very large numbers (75).

The large numbers encountered may be in themselves significant. From what we can tell, European settlement in the Seleucid Empire was not as dense as in Ptolemaic Egypt. The majority of Seleucid settlements appear to have been concentrated in northern Syria and along the Tigris and Euphrates valleys. To aggravate the situation the Empire was almost constantly at war, with subsequent attrition of manpower reserves. Despite these problems the number of phalangites deployed by the Seleucids was remarkably large. A good example is the parade at Daphnae, 168 B.C. The Macedonian phalanx on this occasion numbered some 20- 30,000 men, actually an increase on the numbers deployed at Magnesia some twenty-one years before, 16-26,000 (note Magnesia was a major defeat), after which the Seleucids lost all of their

recruiting grounds in Asia Minor. So remarkable is the recovery that some authors have been prompted to argue that much of the Daphnae phalanx consisted of Orientals dressed as soldiers to improve turnout. Despite this opinion, it would be more logical to attribute this huge reservoir of soldiers to the retention of the *sarisa* allowing anybody regardless of income to fight in the phalanx (76).

The Antigonid dynasty inherited the kingdom of Philip and Alexander after the turmoil of the Diadochi Wars and the phalanx used by this dynasty probably retained the peasant background of its forefather. The Antigonid army is first encountered in the war against Cleomenes III of Sparta, in 223-2 B.C., and periodically this force was sent home, probably to perform agricultural duties. Later Philip V faced problems maintaining the military manpower of his kingdom. He levied the youngest men of the population to face outside threats. He also appears to have attempted land settlement of Thracians in order to bolster recruiting. Perseus, his successor, may have reaped the benefits of this policy as he is recorded as fielding 43,000 men in the Third Macedonian War. There are also references to "free Thracians" in his army, perhaps settlers, much like the *cleruchs* of Egypt (77).

Clearly Macedon faced the same manpower problems it had in the mid-fourth century. Although Macedonian armies had conquered the Persian Empire, any economic benefit either never found its way back to the peasants of the mother country or it was offset by mass migrations in the early Hellenistic period to military settlements in the lands of the richer eastern

monarchies. The *sarisa* was needed by the Antigonids to maintain the size of their phalanx, and furthermore the economic background of the men who wielded the weapon was little different from that of their ancestors under Philip II. Once again the *sarisa* appears to be a method of fielding a mass of proletarian soldiery.

The examples quoted above deal with national trends or policies. There is additional evidence in the form of rapid arming of large numbers of men with the *sarisa*. In the Diadochi War soldiers called *pantodapoi* appear; they are used by factions that worked out of an Asiatic base. They are said to be armed in the "Macedonian fashion", a common euphemism for *sarisaphoroi* (78). In the absence of European military manpower and due to the scale of the Diadochi conflict, perhaps generals were arming natives as *sarisaphoroi* just as the Ptolemies equipped Egyptians in 217 B.C. This type of soldier disappears after the Diadochi period. Perhaps the troop-type had been made obsolete as a result of stable government and European military settlement.

In the later part of Alexander the Great's reign there is reference to an experimental phalanx that combined Persians with Macedonians. The first three and the last rank of each file of this formation were Macedonian veterans armed with the *sarisa*. The rest, twelve ranks, were Asiatics armed with javelins and bows. Obviously Alexander believed that a phalanx of these troops could stand on its own in the line of battle, despite being only twenty- five percent *sarisa* armed. The first three ranks were designed to keep an enemy at bay and the final phalangite was a file closer to keep the

formation together. It may be that this experimental formation was never intended to charge other close order foot, but it would clearly still provide the base off which the Macedonian horse could operate. This example demonstrates how few men in the phalanx needed be armed with the *sarisa* and still be expected to hold the line (79).

Finally there are two examples of note from outside our period: the use of phalanxes of slaves by the Achaean League at the battle of Corinth and by the Pontic army of Mithridates. Both demonstrate again that the *sarisa* enabled line-infantry to be drawn from the least privileged members of society, allowing very large numbers of men to take the field at any one time (80).

The general conclusion that one can draw from this evidence is that large numbers of poor soldiers could be deployed by the introduction of the *sarisa*. This gave rise to a new type of mass warfare in the Hellenistic period. In general Classical armies were small, around 10,000 men, whereas Hellenistic armies often reached the 50,000 mark and it is not unusual to find armies of almost 100,000 men fighting. This was a fundamental shift in the balance of war and created a war effort on a "national" scale in a way that Classical warfare never did. The *sarisa* had freed the military structure of the state from reliance on a small, relatively privileged sector of society and it allowed the manpower potential of the state to be utilised to the full in war. Further, as will be seen, this mass of phalangites, with worse equipment and in some cases training, was the match for the old hoplite.

e) The Organisation and Drill of the *Sarisa* Phalanx

In order for large numbers of close order soldiers to be effective they need proper organisation and drill. Both were employed in the Hellenistic period for regular troops, including the phalanx. In this section we will examine how the phalanx was organised, drilled and the effect this had on battlefield performance.

The main sources for phalanx organisation are three writers known collectively as "the tacticians". They came from mixed backgrounds and their works probably derive from several common sources. Arrian was a Roman governer and military commander of considerable experience who wrote in the second century A.D. Asclepiodotus is closer to our period: he was a philosopher of the first century B.C. Aelian, the third tactician, is a shadowy figure about whom we know almost nothing. These writers preserve some of the technical aspects of phalanx warfare and they had access to military manuals now lost to us. They must, however, be used with caution as they obviously portray "ideal types" (81).

Before we proceed it is useful to examine some of the basic tenets of the tacticians. All believed that the phalanx was the heaviest infantry type, the opposite of the *psiloi* - the light infantry. The phalanx was trained and equipped to fight at close quarters with the enemy. There is some confusion in the tacticians over the type of spear used by the phalanx. Asclepiodotus wrote of the phalanx in terms of a formation equipped with the *sarisa*. Aelian is less precise: he recounts that the soldiers of the phalanx are *doryphoroi* -

i.e. short spear or *doru* bearers. However, despite the obvious implication, it is clear that Aelian assumed that the Hellenistic phalanx was *sarisa* armed without ever directly saying so. Arrian was more informed, perhaps the result of his extensive military experience and he distinguished between a *doru* armed hoplite and the *sarisaphoroi* of the later period (82).

The tacticians are more in agreement when it comes to their main contribution to our study, an in-depth analysis of the organisation and drill of formed infantry. The only problem is one of verification. It is probable that the complex system presented in the tacticians derived from the Spartan organisation of the Classical period as it is based on the file, with progressive numbers of files being linked to form higher units. The organisation presented by the tacticians is "square". The largest formation was a phalanx of 16,384 men, and this number was halved and halved again down the chain of command until a *lochos* of 16 men was reached (83). It is probable that the higher formations of this system are theoretical, since the figures are not easily divisible into numbers given for phalanxes in actual battle accounts. Despite this, attempts have been made to match these theoretical units to historical references, one example being the *strategia*, a unit of some 4,000 soldiers. It has been argued that two such units formed the Macedonian phalanx at Sellasia. It is noteworthy, however, that the number must be changed to 5,000 in order to fit Polybios' figures and this writer would argue that it is rather self-defeating to juggle figures in this way, and that the higher formations of the tacticians be disregarded as only theoretical (84).

It is easier to study the smaller units of the phalanx and we shall start with the *syntagma*. The tacticians record that such a unit was 256 men strong and often equated by historians with a formation called the *speira*. This formation is identified by many authors as the basic unit of manoeuvre of the Hellenistic phalanx. Of special interest are references to "alternate *speirai*" in our sources, a parallel - some argue - to the flexible Roman manipular legion. This line of argument will be followed in full later; suffice it to say here that the *syntagma* often appears in Ptolemaic papyrii and that, as such, it was most definitely an actual rather than theoretical formation (85).

Below this formation the only important sub-unit was the file - *lochos* -, which the tacticians record was sixteen soldiers strong. The file was the key to the phalanx, both Classical and Hellenistic, and was a line of soldiers led by a man of some experience. All drill movements that involved changes of formation were based on the file. The central role played by the *lochos* will become apparent below (86).

The tacticians also offer us some insight into the complex battle drills performed by the *sarisa* phalanx. They were in the main concerned with methods by which the combat density of the phalanx could be changed. Three main spacings were used by the phalanx. A march spacing of four cubits per man was used to maneouvre the phalanx into action. To actually attack an enemy spacing would be reduced to two cubits per man. Finally there was a dense, defensive formation of one cubit per man (87). It is clear that these theorectical writings bear some resemblence to actual phalanx drill,

but there is controversy over the precise frontage occupied by each phalangite. Polybios makes a digression into the nature of phalanx warfare in the later third/early second centuries B.C. He records that when formed for battle the soldiers of the phalanx were spaced at two cubit intervals. He later confuses the issue by stating that each Roman legionary would have to face two phalangites if fighting the phalanx head on. There is considerable modern discussion as to what Polybios exactly meant and the spacing of Roman legionaries at this period. Further, some commentators have found it difficult to accept a military formation where each man would form up on an eighteen inch frontage, the most dense of the three formations. Additional evidence comes from Polybios' critique of Callisthenes' account of the battle of Issus. There he says that one stade would hold 1,600 phalangites when drawn up eight deep and also appears to record an increase in the density of the phalanx as it emerged from the pass onto the plain in front of the Persian position (88).

It is logical that some kind of loose formation, like that described in the tacticians, was used to move the phalanx from position to position when there were no enemy in close proximity. This would allow for rapid movement, crucial if one were to deploy large numbers of infantry efficiently on the battlefield. Polybios' account of the approach to Issus fits this general concept; however it is difficult to interpret his figures as he is attacking Callisthenes' ability as a military historian (note the academic discussion at note 88). The Macedonian army was moving through a narrow and rugged

mountain pass, the enemy some way off and in a defensive position. Speed and flexibility of movement would have been the order of the day, with the phalanx only forming properly when the final approach to the Persian position was imminent. It would appear to be reasonable to, therefore, accept the four cubit spacing for phalanx movement when there was little danger of enemy interference.

Two terms are used for the denser formations. Firstly, συνασπιδισμός (which we will Anglicise as *sunaspismos*), which means 'locked shields'. One might be excused for believing this to be the one cubit defensive formation except that units on occasion attack whilst in *sunaspismos*. The second, πυκνότης (Anglicised *Puknosis*) simply means compact, making it difficult interpret (90).

The *sunaspismos* formation is often encountered in defensive situations, Livy, for example, often compares it to a wall. On one occasion he says the formation is like a Roman *testudo*. It is testimony to the strength of the *sunaspismos* that Livy should make such a comparison because Roman infantry used large body shields to form *testudo*, whilst phalangites only had their small targets. The *testudo* formation is described in many of our sources as almost invulnerable given the right tactical situation. Finally *sunaspismos* formations appear to have been formed by phalanxes who were on the defensive, although this is not a hard and fast rule (91).

Logically the evidence for the *sunaspismos* points to a very close formation. If one were to take the term literally then the shields of the

phalalanx would have to overlap, or at least touch, giving approximately the one cubit frontage of the tightest formation quoted in the tacticians. Furthermore this formation appears to have been generally only assumed when a strong defence was required.

It is difficult to evaluate whether the attack formation of two cubits was a reality in Hellenistic warfare. We can speculate as to the possibility of an advance whilst in *sunaspismos*, with locked *peltai*, or in the *puknosis* formation. Certainly one would presume that the phalanx would have to loosen its ranks if it were to move forward without losing the all important cohesion of its formation, especially as one would be carrying the battle to the enemy. It is, however, impossible to determine the spacing used for such an assault-formation except, perhaps, to say that it was probably looser than the *sunaspismos*.

Changes in the density of the front rank could be achieved by counter-marching and doubling. This technique was used in hoplite warfare and probably copied by Hellenistic armies. The tacticians say that there were three ways in which the phalanx could counter- march, the Laconian, the Macedonian and the Persian or Cretan. Respectively they allowed the phalanx to adjust its density by advancing towards the enemy, giving ground or remaining in position whilst at all times facing the enemy (92).

The key figure in this drill evolution was the *lochagos*. He formed the very front of of the file, *lochos*, and hence the phalanx. To execute a counter-march or double the phalanx, either in or out, he simply changed

position in the phalanx whilst his file "snaked" along behind him. He was supported in this by an *ouragos*, or file closer. All the men in between needed to do was to keep in proper alignment with these two soldiers. The advantage of this system was that only the front and rear ranks of the phalanx needed to be experienced soldiers. Of course there were problems. The *lochagoi*, for example, were in an exposed position and presumably the first to die in battle. Indeed the tacticians recommend that the experienced soldiers be stationed in as many successive ranks back in the phalanx as possible in order to replace *lochagoi* who became casualties. Even so it is important to note that the majority of the phalanx did not have to be veterans for the formation to be effective. We have seen how many *sarisa* units of the Hellenistic period were mass formations composed of badly trained manpower. The *lochagoi* and *ouragoi* would have helped unite these peasant soldiers into an effective military formation (93).

The most important disadvantage that came from the use of *lochagoi* and *ouragoi* was the inability of the phalanx to face either to its rear or to its flank. The *lochagoi* and *ouragoi* were precisely what their name implies, file openers and closers. The phalanx lost its ability to double or counter-march by simply facing to flank or rear. Complex evolutions of drill or wheeling of sub-units within the phalanx had to take place if the whole infantry formation were to be realigned and as we shall see this was very difficult in action, to such an extent that the flanks and rear of the *sarisa* phalanx were extremely vulnerable.

The phalanx as a whole was, as we have seen, split into sub- units of various sizes. It is clear from the tacticians and our battle accounts that these sub-units performed complex functions and manoeuvres. The majority of these were wheeling and marching to create gaps in the front of the phalanx or to move from column-of-march to line of battle. A secondary purpose was to wheel in place to realign the phalanx or face threats coming from directions other than the front. Thirdly, the tacticians give a number of very complex manoeuvres, none of which appear in historical accounts. It is probable that many of these evolutions were part of standard doctrine and utilised at the orders of the sub-unit commanders, for example the *syntagmatarchs*; as tactical circumstances dictated. Some of these manoeuvres and evolutions appear time and again in the sources.

Firstly, deployment from column to line, which was not often attempted in the face of the enemy. The easiest method appears to have been employed by the Spartan army at Mantinea in 207 B.C. The army marched into the field, wheeled and moved parallel across the front of the enemy line. At the appropriate moment the sub-units of the phalanx halted and wheeled to face the enemy (94). A second, more complex manoeuvre, was to peel each sub-unit successively out of the column and march it up to form a battle line adjacent to the lead unit of the army. This is described in detail by Xenophon in relation to the Spartan army and is seen in use in battle at Issus, 333 B.C. This manoeuvre needed a well trained and co-ordinated army; it was often used for deployment from narrow passes and the like (95). We can presume

that the *syntagmata* of a Hellenistic phalanx would perform this battle drill. The leading *syntagma* would slow down and its fellows would move up to either side of it as the defile widened; as a result a continuous front would be maintained. A phalanx would have taken up a considerable length of road when in column, and close control of the movement of units would have been essential if disorder were to be averted. It is noteworthy that at Issus local commanders performed the drill without prompting from higher authority, the implication being that a standard drill was used.

A variation of this drill may have been used on those occasions where gaps were opened in the ranks of the phalanx, an example being Gaugamela, where scythed chariots were allowed to pass through the phalanx leaving it unharmed (96). It is a mystery as to how this was achieved. Clearly reducing the density of the phalanx by counter-marching would not have created enough room between files to allow through a massed chariot attack. If, however, we examine the options open to the phalanx via information from the tacticians, we might conjecture a combination of Macedonian counter-march, pulling a phalanx sub-unit out of the line whilst retaining facing, and a wheeling movement behind a sub-unit to left or right. One could, in theory, create a series of avenues perhaps a *syntagma* wide. Chariots would naturally move into and along these as they shied away from projecting *sarisai* of units to either side of the gaps. The procedure could be reversed to reform the phalanx. This manoeuvre would have been very complex and the writer would argue that only the most experienced Hellenistic army could expect to

use it. It is noteworthy that at Gaugamela the phalanx was briefed in full on the tactic and ordered to remain silent to ensure the effective transmission of orders.

Finally sub-unit organisation would be used to order the phalanx for battle. In Hellenistic times an increasing use was made of complex phalanx formations. The tacticians themselves show very complex formations that do not appear in our histories, such as huge army wedges (97). Clearly a Hellenistic phalanx of tens of thousands could only have been deployed with a proper command structure such as that outlined in the tacticians.

The tacticians give us an insight into the technical workings of the phalanx that would otherwise be hidden in extant battle accounts. Some of the work of the tacticians is theoretical, but much is invaluble for our understanding of the basic mechanics of *sarisa* warfare. With the writings of the tacticians at hand we now need to examine the *sarisa* phalanx in action on the battlefield.

f) The *Sarisa* Phalanx in Action

In this section we shall examine the tactical changes brought about by the introduction of the *sarisa phalanx* to the ancient battlefield. In particular we shall see the *sarisa phalanx* in three tactical situations, against the hoplite phalanx, against other *sarisa* armed formations and finally against the Roman legion (98).

Modern analysis of the tactics of the period have unfortunately been overshadowed by the reputation of Alexander the Great. The genius of Alexander and his spectacular campaigns in the east has - in the eyes of some - devalued the exploits of later Hellenistic armies. A general theory has, as a result, been argued that the *sarisa* phalanx of Philip and Alexander was a highly trained and flexible combat arm, but without the genius of these two monarchs and with a lack of tactical imagination on the part of later commanders, the *sarisa* phalanx degenerated and became unwieldy and vulnerable on the battlefield. The argument continues to blame this tactical inflexibility for the final victory of the Roman legion over the Hellenistic phalanx (99). It will be shown how simplistic this theory is and how the *sarisa* phalanx remained a potent force until matched by a superior tactical system, that of the manipular legion.

The first period under examination is the early period, where the enemies of the *sarisa* phalanx were hoplites and the Persian army. Unfortunately the rise of Macedon under Philip II is very badly documented and we can only conjecture as to the effectiveness of the new type of phalanx in action. We know that Philip routed the army of Bardylis early in his reign and some scholars have attributed this to the combination of cavalry and infantry made possible by the invention of the *sarisa* phalanx. Others have argued that the use of the echelon was pioneered at this encounter, a tactic that later became common in Alexander's eastern war (100).

The first main hoplite-*sarisa* clash for which we have evidence is

Chaeronea, 338 B.C. This battle has been examined in detail by scholars who base their conclusions on literary sources and various archaeological surveys of the battle site. Reconstructions of the battle suppose a controlled withdrawal by the Macedonian phalanx to lure the Greek hoplites out of formation; into the resulting gap charged the Macedonian cavalry led by Alexander. Their line punctured and the ranks of their phalanx disorganised, the Greeks were forced to quit the field. We must, however, reject these reconstructions as conjecture only, the literary evidence being too sparse and imprecise. It is, however, possibly significant that it was clearly the Macedonian cavalry which won the battle, and that the phalanx played a secondary role (101).

A similar hoplite-*sarisa* confrontation came at Megalopolis in 331 B.C (102). Here a numerically inferior Spartan army fought Antipater, Alexander's regent in Greece, to a standstill, victory only going to the Macedonians after an entire day of long and hard fighting. Curtius tells us of the ebb and flow of battle, a series of attacks and counter-attacks. The Macedonians appear resilient in defence, but brittle in attack - hence the "see-saw" nature of the action. The Spartans appear to have been able to withdraw at the end of the day in relatively good order, despite the fact that their commander was very badly wounded and their weapons slippery from sweat and difficult to handle. It is noteworthy that Curtius says that the battlefield was narrow and congested. One might conjecture that the Macedonians were, as a result, forced to fight without being able to use their cavalry to the full. If this were

the case then the phalanx would have had to engage the Spartan hoplites frontally and this appears to have degraded their combat efficiency markedly, especially when advancing to the attack.

The battles against the Persians are difficult for us to evaluate as part of an overall Hellenistic context. Hellenistic armies did not face a foe like the Persian army of Darius III and perhaps the only contribution these examples make to this study is evidence for the *sarisa* phalanx in action against Greek mercenary hoplites in Persian service. The *sarisa* phalanx played little part in the battle of the Granicus, in 334 B.C., which was won by cavalry who forced a mounted Persian cordon away from the river bank, whilst the infantry waded to the eastern bank (103). The battle of Issus, 333 B.C, is more informative. Again the phalanx crossed a river obstacle, but this time infantry, some of it mercenary hoplites, opposed the crossing. One Macedonian *taxis*; that of Ptolemaeus, was badly mauled - losing ten per cent of its effectives and being outflanked. On this occasion rough ground placed the *sarisa* armed troops at a clear disadvantage (104). Gaugamela, 331 B.C., also saw the phalanx partially failing in its mission. Alexander contrived to create an army square to prevent the superior Persian cavalry from encircling his army and attacking it from the rear. The *sarisa* phalanx formed the front face of the square. When placed under pressure, one phalanx *taxis*; that of Simmias, failed to maintain its alignment and a gap was created in the line, into which rushed Indian and Persian cavalry. Fortunately for the Macedonians this cavalry passed right through the army intent on reaching

the Macedonian camp, thus averting the disaster of the phalanx being taken in the rear whilst pinned frontally. One must also add, however, a supreme example of disciplined drill, where earlier in the action the phalanx had opened its ranks to allow enemy chariots to pass harmlessly through to waiting light infantry inside the army square (105). At the Hydaspes, 326 B.C, the presence of elephants in the Indian army prevented the Macedonian cavalry from assuming its normal battle winning role, but the phalanx managed to combat these beasts plus a large number of Indian infantry only after a long and costly battle of attrition (106).

Several preliminary conclusions about the nature of *sarisa* warfare can be drawn from the voluminous Alexandrian evidence. It is clear that the *sarisa* phalanx could be a highly trained, precision instrument in the right circumstances. The anti-chariot tactic used at Gaugamela has been noted, and to this can added the use of drill evolutions to frighten Thracians early in Alexander's reign (107). From our survey of the tacicians (see above) it can be ascertained that the phalanx was trained in complex drill procedures in order that these battlefield feats could be accomplished. It is also important to note, however, that the phalanx could very easily become disordered, placing itself in a very dangerous position. In addition the extra-battlefield activities of the phalanx in Alexander's eastern campaign must be noted; they mark it out as a premier infantry force. Despite this the battlefield record of Alexander's phalanx does not merit the modern opinion that it was a flawless machine that was never equalled, let alone surpassed, in the Hellenistic

period. Alexander's phalanx was a veteran, and in many ways *élite,* force, but it occasionally encountered difficulties when performing its primary, battlefield role. These failings stem from fundamental aspects of *sarisa* warfare.

The many conflicts following Alexander's death are collectively known as the Diadochi Wars. A series of wide ranging campaigns were directed by generals who had served under Alexander - men who were thoroughly aquainted with the problems of *sarisa* warfare - and fought by armies whose core were Alexandrian veterans. Due to the massive increase in the size of the conflict, however, these armies were leavened by many new recruits being drafted into the ranks to bolster numbers. We have already noted how this was easily facilitated by the ease by which raw troops could be called to service in the *sarisa* phalanx (108).

The first battle under examination is Crannon, 322 B.C. This is perhaps the best documented hoplite-*sarisa* encounter that has survived. Attention must be drawn to the size of the Greek army, some 40,000 strong, very large by Classical standards. It is not known what percentage of this force were hoplites, but the sources record that the quality and morale of the troops was high, as many ex-mercenaries flocked to the ranks of the Greek army. It might be noteworthy that some effort had been made to concentrate such numbers of trained men, perhaps to offset the large manpower potential of the *sarisa*-armed Macedonians. It is also important for our survey that the Macedonians refused battle after a preliminary cavalry skirmish was won by

the Greeks. From what we know of hoplite-*sarisa* battles up until 322 the Macedonians had always enjoyed cavalry superiority and failure in this area might have influenced the Macedonian decision (109).

The battle proper is similar to the outline of Megalopolis left us by Curtius. By the day of Crannon internal dissension had reduced Greek numbers to 25,000, to which the Macedonians had 40,000 infantry alone. Again a cavalry action preceded the battle, this time, however, followed by a major action. Initially all went well for the Macedonians as they pushed the Greeks back. However the situation stabilised as the Greeks began to fall back up a slope. The Greeks were able to dress ranks and the Macedonian attack was repulsed. Losses were 150 to the Macedonians, 500 to the Greeks. The Macedonian army at Crannon contained many veterans of the Persian wars. It outnumbered its enemy, but even after initial success it failed to carry the battle through to a decisive result.

Crannon is the last battle where hoplite faced the *sarisa* phalanx. The rest of the Diadochi Wars and military history up until the intervention of Rome in Hellenistic affairs, in the later third century, are characterised by *sarisa-sarisa* confrontations. In the Diadochi period politics influenced the battlefield; for example it was common to see large contingents of an army deserting. Often this led to one or both of the flanks of the phalanx being exposed, surrender being the normal result. There are, however, still many actions where tactics and determination dictated the outcome of the battle.

The first example is an encounter between Craterus and Eumenes in Asia

Minor in 322/1 B.C (110). Eumenes' infantry were heavily outnumbered by the enemy, so Eumenes launched an aggressive cavalry attack to open the action. He was entirely successful and both Craterid wings were stripped away, Craterus being killed in the process. As a result the infantry never came to grips, the Craterid phalanx surrendering. Here, even with superiority in numbers, a phalanx could not advance if its flanks were not secure. This was not the case in the battle between Antigonus and Alcetas in Pisidia, 320/19 B.C (111). Here the Antigonid horse were also victorious in their sector of the field; however Alcetas' infantry managed to fight on despite the enemy's cavalry dominance and being outnumbered by the enemy phalanx.

The best documented battles in this period were Paraitakene, 317/6 B.C, and Gabiene, 316/5 B.C. The sources differ as to what percenatage of the infantry in each battle were *sarisa* armed, so only numbers for phalangites definitely armed with the *sarisa* will be cited. It is clear, despite this, that large numbers of soldiers had been drafted into the phalanxes of both sides, perhaps again pointing to the ease with which *sarisa*-armed infantry could be raised and deployed.

At Paraitakene the Antigonid phalanx consisted of 20,000 men, of which 11,000 were armed with the *sarisa*. Some of Antigonus' infantry were called *pantodapoi*. We cannot be certain as to the origin of these troops, but it is possible, that they were Orientals armed in the Macedonian fashion to boost numbers (112). Facing these were 17,000 men under Eumenes, 11,000 being *sarisaphoroi* (113) . Eumenes' force included 3,000 *hypaspists* and 3,000

*argyraspides*. These were *élite* infantry, some of whom had served in Alexander's guards, and they proved to be a force to which Antigonus had no answer (114). Diodorus' lengthy account of this battle devotes little to the infantry fight but it appears that the *élite* centre of Eumenes' army smashed clean through their opponents and carried the day. Overall, numbers were in Antigonus' favour - although we cannot be certain of the true ratio of *sarisaphoroi* to other infantry. Paraitakene is an example of quality prevailing over quantity. It is also important to note that the cavalry action on the wings went very much in Antigonus' favour. Perhaps, however, the ferocity of Eumenes' infantry attack did not give Antigonus' horse time to threaten the enemy's rear.

Posterity has not left us any figures for the numbers of combatants at Gabiene. Details are given for each contingent in Eumenes' army and it is therefore possible that his army was approximately the same strength as it had been at Paraitakene. No details are given for Antigonus' army except for references to various units during the fighting. All we can say with confidence is that Antigonus' infantry were deployed in the centre.

The victory of Eumenes' *élite* phalanx at Paraitakene had had a severe effect on the morale of Antigonus' men and this was reflected in the crushing victory inflicted on the Antigonid centre, 5,000 being killed. This caused Antigonus' army to break up in flight. Victory was stolen from Eumenes by the well-known defection of the *argyraspides* after the capture of their camp by Antigonus' cavalry (115). Again the value of highly trained veteran

*sarisaphoroi* was demonstrated, by the devastating effect the attack of the *argyraspides* had on the enemy, far out of proportion to their numbers.

The next example is Gaza, 312 B.C., fought between Demetrius and a Ptolemaic force under Ptolemy I and Seleucus (116). It is clear from Diodorus that Demetrius' phalanx was of superior quality to that of the enemy and that it may also have had an advantage in numbers. Ptolemy and Seleucus, however, overcame this disadvantage by winning an overwhelming cavalry victory on one flank. Once stripped of its flanking supports, Demetrius' phalanx surrendered; these soldiers were taken back to Egypt and settled there.

The largest battle of the Diadochi period, Ipsus 301 B.C., has only survived in fragments (117). Plutarch's account is perhaps the best, but it concentrates on the hero of his work, Demetrius, and so covers only the cavalry action of the Antigonid right in any detail. Two points are important for our analysis. Firstly, the allies expected to lose on their left flank and deployed a chain of elephants to seal off this wing and protect their infantry centre. Secondly, the centre of the Antigonid army may have fought on after its left was uncovered by a successful allied cavalry assault. Demetrius was prevented from intervening in the centre by the elephants, whilst the allies rode off the field in rash pursuit. Clearly the two wings of a Hellenistic army had to be closely supervised to ensure a proper envelopment of the vulnerable flanks of the phalanx.

Throughout the Diadochi Wars campaigns were fought in Greece, but

very few details have survived that are of use in our examination of the phalanx. Pyrrhus' Macedonian campaign of 279 B.C. was won by the death of the enemy commander in personal combat and the Epirot phalanx overwhelming its Macedonian opponents, killing some 5,000 men. Clearly again morale and leadership were important factors (118). A more detailed account has survived of Pyrrhus' attack on Sparta (119). As Pyrrhus' army approached their city, the Spartans constructed a defensive barrier of wagons buried up to their axles, with a ditch in front. Pyrrhus assaulted this barrier repeatedly with his infantry, called hoplites in the sources but most definitely *sarisa*-armed. However, on this occasion a defended field fortification proved impenetrable to a *sarisa* phalanx.

We now jump forward to the later third century and our primary source now becomes Polybios. A soldier and statesman himself, he provides us with first class evidence for military operations in the period up to Pydna, the closing date for this study.

The first encounter of the period detailed in Polybios is Sellasia, 222 B.C. (120). Sellasia was the decisive battle of the Social War, fought on the one hand between Macedon and her Greek allies and on the other the Spartans under Cleomenes III. The first problem is the size of the *sarisa* phalanx deployed by Cleomenes, after he had reformed his army and introduced the *sarisa* to many of his infantry. In particular Plutarch tells us that he expanded the citizen body of Sparta by taking the most promising of the *perioikoi* and equipping them with the new weapon. At Sellasia *perioikoi*

unit of about two hundred and fifty men (see above p.51). We can interpret Polybios' statement in two ways: either alternating blocks of Illyrians with *chalkaspides* were deployed side by side or each contingent was deployed in the flexible alternate-*speirai* formation, each being an exclusive body, perhaps one behind the other. If the former is correct then we can go one step further. Certain battle accounts may point to sub-units of *sarisaphoroi* being mixed with peltasts in the alternate-*speirai* formation, thereby giving the flexibility a normal phalanx lacked (see below p.91 on Pyrrhus' Italian battles). If this is the case, then the *chalkaspides* are *sarisaphoroi*. Alternatively the *chalkaspides* are, like the Illyrians, peltasts and this interpretation is influenced by the general argument regarding the equipment of guard units with 'coloured shield' titles, outlined above. Briefly many historians believe these guard units were highly trained peltasts and, as we shall see, there is evidence that the peltast of the Hellenistic period had evolved from being a purely missile armed infantry type to a semi-heavy troop type skilled at shooting and hand-to-hand combat. To summarise, therefore, either the *chalkaspides* are *sarisa*-armed troops intermingled with Illyrian peltasts to produce a flexible phalanx formation, or they are peltast troops - once more mixed with the Illyrians -, or they are a separate body - still in the "alternate-*speirai*" formation - stationed to the rear of the Illyrians, armed either as *sarisaphoroi* or peltasts.

To solve this dilemma, the scheme of deployment for the entire allied right must be taken into account and the following reconstruction is most

logical and shows the *chalkaspides* were, on this occasion, peltasts. Firstly, although deployed in the alternate-*speirai* formation, the Illyrians and *chalkaspides* were deployed as separate contingents. Polybios states that the Illyrians opened the action, so they would be in the van, the *chalkaspides* peltasts following immediately behind them. Following them were Acarnanians and Cretans, *akontistai* and bowmen respectively; then came the Achaeans, in reserve (124). The plan of operation was one of attrition followed by a break-through attack by the Achaeans, who were hoplites. The semi-heavy troops would have advanced to pin the Spartans in position, either by hand-to-hand fighting or missile attack. Their fluid formation - the alternate-*speirai* -, and their tactical doctrine - as semi- heavy troops -, would have protected then from the powerful *sarisa* phalanx. Added to which the ground being fought over was broken, ideal terrain for semi-heavy or light troops. In addition the *psiloi* forming the third rank could shoot a barrage of missiles over the heads of the two lines of peltasts, the Spartans being a clear target on higher ground than their intervening friends. Finally after enough confusion had been caused, the Achaean heavy infantry could advance in an attempt to push the Spartans off Euas. The writer would argue that this tactic was employed because of the very strong position held by Eucleidas and the risks that would have surrounded an unprepared frontal attack. The writer thus believes that the *chalkaspides* were peltasts.

So much for the numbers of *sarisaphoroi* present at Sellasia. What can the battle tell us about the tactics employed by the two *sarisa* phalanxes?

by a charge through the centre by the Achaean cavalry, entirely on the initiative of Philopoemen. After this the mixed force on the allied right resumed its task of levering the phalanx of Eucleidas out of position.

At this point Polybios criticises Eucleidas' handling of the situation. He says that a limited attack should have been ordered, thereby disrupting the allied battle-plan and their formation, which was so suited to their equipment. Then the phalanx should have made a fighting withdrawal back to the crest of the hill (126). This tactical advice appears sound given the situation that existed on Euas. A rapid advance down the hill would have disrupted the phalanx's formation, but this would not have mattered whilst opposed by the peltasts and *psiloi* only - a point which supports the conclusion that *sarisaphoroi* were absent from the allied front line on Euas. Once, however, this advantage had brought the Spartans to the Achaean hoplites waiting in reserve, it would have been time to fall back; hopefully the bad terrain would hinder the Achaeans as much as the Spartans, blunting their attack and giving Eucleidas the time he needed to reorganise his line.

Instead Eucleidas chose to hold the crest and it was here that the battle for Euas was fought out. Eucleidas' motives are not clear. Perhaps he felt safer uphill of the enemy; perhaps he was following defensive orders issued by the king. Polybios says that the Spartans were eventually pushed back due to the weight of their enemy's formation and their peculiar arms (127). Does this support the conclusion that the front two lines of the allied force on Euas were semi-heavy peltasts? Or is this an argument for the *chalkaspides* being

*sarisaphroi*? The answer is surely affirmative to the former question, since, firstly, the role of the Illyrians is stressed in our sources and they are most definitely not phalanx troops. Secondly, although ground was sloping and broken, Polybios specifically refers to the allied attack being fresh and ordered - as one would expect with semi- heavy troops (128). The Spartans, on the other hand, chose to fight on the crest and may have had the majority of their men on the reverse slope thereby negating advantage of ground whilst incurring the disordering effects of an uneven battlefield.

Analysis of this event relies on our perception of the allied attack. If it is assumed that a frontal charge was made by the allied troops, then it is difficult envisage how peltasts forced the Spartans off the hill by hand-to-hand combat. Polybios accounts for the allied success by their use of a special formation and tactics, so it would be more realistic to reconstruct the allied attack as a series of fluid and controlled actions conducted by *speirai*. In this manner the Spartans would have been worn down by missiles and then engaged by small units moving in and out of combat, sections of their phalanx might have been drawn out of position and the tactical cohesion, that was critical to the phalanx's survival, may have been broken up. Eventually the weary and demoralised Spartans would have fallen back, accelerating the collapse of their formation. Eventually the phalanx would have broken in flight. As we shall see later, the battle on Euas may have presaged the tactics later used against the phalanx by the Roman manipular legion.

On Euas we see how a badly sited phalanx could be disrupted by combined missile and hand-to-hand attacks; further how a flexible, fluid formation, like the alternate-*speiria* of peltasts, could slowly disrupt an ordered line. There was little Eucleidas' men could do but stand and take the punishment dealt out by the combined allied force attacking them. Once their spirit was broken they fell apart, retreated and eventually fled. We note that Polybios' initial advice was that a combined-arms force like that approaching the Spartans on Euas needed to be pushed away at all costs. Here Polybios emphasised the vulnerability of an unsupported phalanx.

Events on Mount Euas had an immediate effect on Cleomenes' men on Olympus. Loss of his left wing forced Cleomenes to launch an attack with his phalanx. Our sources are contradictory as to the timing of this attack. Polybios has Cleomenes order the attack after he has heard of the defeat of his brother; Plutarch has the advance begin before this, i.e. with no outside factors affecting Cleomenes' judgement (129),. Polybios, as the primary source and due to his reputation, must be preferred. In addition we must note that the cavalry attack in the centre, launched by the allies to stop a move by Spartan *psiloi*, was still developing and Polybios adds this factor into Cleomenes' decision to attack. Clearly it was very possible that the left flank of Cleomenes' phalanx could be enveloped by victorious allied soldiers. Here we see a basically defensive posture broken by a change in tactical circumstances. Cleomenes did not want to attack, he was forced to.

Cleomenes' men tore down the barricade that covered their front, the

existence of which further indicates their intention to defend the crest of Olympus. Both sides recalled their *psiloi* and the order to lower *sarisai* was given. Cleomenes' men advanced down Olympus, and vicious, close-quarters fighting developed at the foot of the hill. The Spartans, on the face of it, had two advantages, numbers and ground. Polybios also adds that the courage of the Spartans told in the fight. However, eventually their attack ran out of momentum and the battle slowly began to go against them. Especially important was the formation of the Macedonians. Polybios says that Antigonus was able to close his phalanx and depth became the deciding factor (130). This may be a reference to the formation of *sunaspismos*. As to how the mechanics of the change operated we can only conjecture, especially as the Macedonians appear to have completed the evolution whilst in combat. Perhaps the forward ranks of the phalanx fell back and compacted into those behind, a difficult but not impossible manoeuvre. Of especial importance in Polybios is the compacting of weapons; obviously it was crucial that as many *sarisai* engaged the enemy as possible.

The general conclusion that we can make from Sellasia is that the *sarisa*-armed formations were extremely reluctant to advance and engage each other; further that the attacker was at a disadvantage, even with ground and numbers in his favour. It seems that by merely moving forward, a phalanx courted disruption of its formation and hence disaster. Secondly, in the right circumstances the phalanx could be defeated by lighter troops using fluid, combined-arms tactics. The tactical equilibrium of a phalanx could be

upset by a properly directed occillating attack, a tactic that will become clearer when we see the Roman legion in action against the phalanx.

Our next example is perhaps the classic *sarisa* versus *sarisa* confrontation, Raphia, 217 B.C. (131). The Seleucid and Ptolemaic armies that fought at Raphia were large and contained a multiplicity of troop-types that fought together in a complex tactical scheme. The respective *sarisa* phalanxes were only part, albeit a large part, of this scheme. Raphia has been viewed by some modern commentators as an example of the decline of the quality of the *sarisa* phalanx since the days of Philip and Alexander: we shall keep this theory in mind as we examine the tactical role of the phalanx at Raphia.

Polybios' account of Raphia concentrates on the two commanders and our primary area for study, the infantry combat, is badly recorded. Thus our perception of the role of the phalanx in the battle is prone to distortion. The two armies were deployed in three sectors, two wings and a centre, the phalanxes being in the centre. Generally the right wings of each army, mostly cavalry, attacked and drove their opposite numbers from the field. The phalanxes then fought, victory finally going to the Ptolemaic army. It is noteworthy that the phalanx of both sides stood whilst their wings were stripped away, Polybios appears to think this unusual and worth recording (132). It is also important to note that as at Sellasia the two infantry phalanxes spent a lot of time inactive before finally being committed.

There has been debate over the numbers of *sarisaphoroi* present at Raphia, the Ptolemaic phalanx in general and the equipment of the Seleucid

*argyraspides* (133). This debate has received much attention by scholars, but all that needs to be said here is that the writer supports the argument for the larger figure on the grounds that many of the Ptolemaic phalangites were newly-raised Egyptian *machimoi* and a large Ptolemaic phalanx would have been needed to overcome the veteran Seleucid infantry. As for the *argyraspides*, they form part of the general argument surrounding Hellenistic guard units (see above page 69). Despite this, it is probable that the *argyraspides* were armed with the *sarisa*, and took their place in the line as an *élite* phalanx.

As has been said, the record of the infantry fight at Raphia is brief. Polybios says that the Ptolemaic phalanx, under Andromachus and Sosibius, lowered *sarisai* and charged. They broke the Seleucid line after a short fight, the *argyraspides* putting up stiffest resistance (134). Polybios implies that the infantry only came to blows after the action on the wings had been decided and that the Seleucids received the Ptolemaic infantry attack at the halt.

The reasons for the victory of the Ptolemaic phalanx are hard to determine given the paucity of evidence for their part in the battle. Numbers were obviously important and often the reader is given a false impression of the size of the two *sarisa* formations, especially with regard to the Ptolemaic phalanx, with many modern commentators concentrating on the settler and Egyptian contingents. The Seleucids deployed 5,000 Greek mercenaries, 10,000 *argyraspides* and 20,000 Macedonians, all armed with the *sarisa*. On the other hand the Ptolemies had 3,000 Libyans, 20,000 Egyptian *machimoi*,

8,000 Greek mercenaries and 25,000 European settlers, again all armed with the *sarisa*, a total of 56,000 (135). Therefore the ratio of phalanx was nearly three to two in favour of the Ptolemaic army. One must, however, remember that a substantial part of the Selucid line was formed of the *élite argyraspides*, whilst many of the Ptolemaic phalanx were newly recruited natives. This may have offset the Ptolemaic army's predominance in numbers.

We can observe at Raphia the same reluctance to commit the phalanx until circumstances left no other option. Polybios' account shows the phalanxes still facing one another after the cavalry actions on the flanks, despite the fact that both wings had been cleared of supports. The situation was, however, different from that facing Cleomenes at Sellasia. At Raphia the battle was not going against Ptolemy; if anything one might describe the battle as a draw at the point when his phalanx was committed. It is clear that Ptolemy saw the clash of the infantry as the decisive action of the battle; hence his appearance with his men in the centre. It may be that he feared the superior cavalry forces possessed by the Seleucids, for they had more cavalry, especially light cavalry suited to pursuit. The imminent return of Antiochus' pursuers might have motivated the assault in the centre in order to win the day before the enemy could intervene with their superior mounted arm. It is clear from Polybios' account that he thought the fight in the centre to be of supreme importance - hence the vignette when Antiochus realises how rash he has been and that he has lost the battle. Again the phalanx battle

was forced on one of the commanders.

Why did the Ptolemaic infantry win? Firstly, the Ptolemaic army possessed more *sarisaphoroi*, who could have been deployed in two ways. Either they retained the same depth as the Seleucid infantry and overlapped their wings, or they were in a deeper phalanx. Of the two, the latter is more likely to be correct. Depth was the safest option for the raw troops being used by Ptolemy. Furthermore, it was not the task of the phalanx to envelop enemy wings; it was too clumsy. Outflanking moves were the responsibility of the lighter support troops deployed, as at Raphia, on the wings of the phalanx. Therefore the Ptolemaic phalanx probably had an advantage in depth. Secondly, it appears that the light infantry deployed to the right of the Ptolemaic centre took advantage of the developing tactical situation better than their Seleucid counterparts on the opposite side of the field. These troops may have begun to envelop the Macedonian settler phalanx on the left of the Seleucid line as the battle progressed (136). Such a manoeuvre would have had a severe morale effect and would have disrupted the formation of the phalanx. This being the case, the Ptolemaic foot may have struck an unformed phalanx, compensating in full - and more - for any disorder they may have incurred in their advance. Such a hypothesis is borne out by the reference to the *argyrapides* being the last to flee. Not only were they *élite* troops, but their flank was secure until the settler phalanx fled. Thus, from what little information we have, Raphia demonstrates the importance of depth and the vulnerability of the flanks of the phalanx.

The final *sarisa sarisa* confrontation that has survived in detail from our period is the battle of Mantinea, 207 B.C. (137). Philopoemen's newly reformed Achaean army met and defeated the Spartans under the tyrant Machanidas. As with many of the battles of the period it is difficult to determine the precise numbers of *sarisaphoroi* present. At Mantinea it is probable that the bulk of the heavy infantry deployed by both sides were armed with the *sarisa*. Evidence can be found for this in the general order to lower *sarisai*, given to both phalanxes during the battle (138). This being the case Mantinea is unique in that both sides deployed reformed phalanxes.

Again we cannot be certain of the number of men that stood in the ranks of each phalanx. In fact we have only one reference to numbers for this encounter: Plutarch recorded that there were 4,000 Lacedaemonian dead. We can, however, give an approximate figure. Both sides deployed armies of about 20,000 men, of whom, respectively, 12,000 were phalanx (139).

The Achaeans deployed their army first. The phalanx was mustered behind a ditch which stretched the length of their centre. As the obstacle would have made any advance disorderly and dangerous, to say the least, we can only assume Philopoemen intended his phalanx to have a purely defensive role. This conclusion is further supported by Plutarch's assertion that the Achaean phalanx formed in compact order (140).

The Spartans marched on to the field and deployed into battle formation directly from road column. Machanidas then deployed a chain of light torsion artillery pieces along the front of his army. Some commentators have

interpreted this as part of an overall plan to besiege the town of Mantinea itself. Walbank, however, has rightly noted that Machanidas moved out of his base at Tegea only after the Achaean army had mustered. He must, therefore, have regarded the chance of an encounter battle before he could set down to besieging Mantinea as high. Polybios mentions the artillery twice, once during their transport to Mantinea in wagons, secondly when they were actually set-up for the battle (141).

Furthermore as the Spartans moved directly into action from column of march, we must assume they transported the artillery fully assembled and ready for action. This was very unusual because it was not until the Roman invention of the *cheiroballista* that siege artillery was routinely moved in fighting order. Hellenistic weapons were normally either dismantled for portage or constructed on site by work gangs directed by skilled engineers. Mantinea is not an isolated example of artillery being used in the field - for example Alexander used such weapons in his crossing of the Oxus - but it is very unusual (142).

We must assume that the weapons deployed by Machanidas were light bolt shooters, the large stone throwers of this period being too heavy to move across country in wagons. Such artillery consisted of anti-personnel weapons shooting a bolt three *spans* in length, very good at shooting men, but almost useless against city walls. As such we must conclude that Machanidas never intended to use these weapons against Mantinea itself and that he planned to use them in a set-piece battle.

The Spartan army marched onto the field of Mantinea sweeping across the front of the waiting Achaeans. It then halted and each sub-unit wheeled to the right to face the enemy and to form the line of battle. The Achaeans did not interfere with this manoeuvre, probably due to the defensive arrangement of their army discussed above. Machanidas' army performed this drill with great precision, so-much-so that a detailed plan of action may have been arranged before they ever reached the field. That being so, we shall examine the positioning of the Spartan artillery and the repercussions this might have had on the tactical role intended for the phalanx. Machanidas placed his machines in a chain in front of his army and as a result his phalanx could not advance; doing so would have 'masked the guns', so to speak. The placement of the artillery, so painstakenly brought to Mantinea, indicates a static, defensive role for the phalanx.

Therefore it appears that both commanders envisaged a defensive role for their *sarisaphoroi*, at least until a tactical breakthrough was achieved elsewhere. Philopoemen perhaps wanted a stalemate, or at least to force the Spartans to attack at a disadvantage. Machanidas, however, out-thought his opponent. When the Achaeans saw the bolt-shooters, they were astonished and at a loss what to do - it would have been revolutionary to encounter so much artillery on a battle field. These weapons could have shot down the men of the Achaean phalanx with little risk of reply. Ancient bolt-shooting artillery was greatly feared by soldiers, since no armour could protect a man from missiles launched from even the lightest bolt-shooter. Further it is clear

from the sources that such weapons greatly outranged the missiles of *psiloi*. The tactical plans of the two commanders appear to indicate that both expected an essentially static, defensive role for both phalanxes. Machanidas hoped to sting the Achaeans into action, and the battle began with a reaction to this unforeseen threat. The Achaean phalanx could not expect to advance across the ditch protecting its front without fatal disorder, making it easy prey to its Spartan counter-part, so Philopoemen sent forward the left wing of the Achaean army to out-flank and roll-up the Spartan artillery. Unfortunately this attack was repelled and put to flight by a swift counter attack by the Spartan right, which left the field in hot pursuit.

Polybios records that the Achaean phalanx was deployed in 'alternate-*speirai*' (143). On this occasion reference is clearly made to an organisational and tactical division within the phalanx as a whole. Other evidence points to the high standard achieved by the "new model" Achaean army in these two areas. Plutarch tells us how Philopoemen drilled and exercised the soldiers and also refers to the parade drill and military evolutions of the Achaean phalanx at the Nemean games (144). The quality of Philopoemen's phalanx might have been achieved in two ways. Firstly intensive training might have taken place immediately after the *sarisa* reform. Alternatively the phalanx might have been bolstered by a core of permanant *élite* troops, references to which appear elsewhere in the history of the League (145). Either way Philopoemen's phalanx at Mantinea was able to deploy in 'alternate-*speirai*' and to use this flexible formation effectively in the battle.

The sources are critical of the Spartan tyrant Machanidas for failing to rally his right from pursuit and direct it against the exposed flank of the Achaean phalanx. Clearly the vulnerability of the phalanx's flanks were well known to ancient writers. We should note, however, that the peculiar formation of the Achaean infantry allowed Philopoemen to wheel a *telos* of his phalanx to cover his exposed left. The special 'alternate-*speiral* formation allowed the sub-units of the phalanx to manoeuvre independently without causing disruption to the line of battle as a whole (146). Plutarch takes this manoeuvre one step further: he says that the *telos* of the phalanx actually outflanked the Spartans and fell on their exposed right, but this movement is not mentioned by Polybios and is therefore suspect (147).

Rejection of Plutarch's account of the actions of the left of the Achaean line is further supported by the sequence of events that follow in Polybios. In Polybios' account the manoeuvre of the *telos* was overtaken by events. Orders were issued for the rest of the Achaean phalanx to advance, presumably over the ditch, the detached *telos* was joined by remnants of the defeated Achaean left and it seems that this combined force was going to support the advance of the phalanx - we must assume at this point that this *telos* had moved beyond the boundary of the ditch. Perhaps Philopoemen wanted to ease the crossing of the ditch by threatening the enemy's exposed flank. This combined attack on the Spartan phalanx never came about, as the Lacedaemonians took matters into their own hands by launching a vigorous attack on the Achaean infantry. They appear to have become carried away by

the success of their left and crossed the ditch without orders, disordering their formation. Polybios was aware of the danger of crossing this obstacle in the face of enemy resistance, and he records that the Lacedaemonians were at first worried at this prospect, but once they had started their move they had no alternative, made light of the ditch and continued their assault. The Achaeans lowered *sarisai* and put the enemy to flight. If we were to accept Plutarch's record of the flanking attack by the detached *telos* then we might insert it at this point in the battle account. As, however, Polybios is silent on this point, the writer would prefer to ignore Plutarch and place the emphasis for Achaean success on the disorder incurred in the Lacedaemonian phalanx by crossing the ditch (148).

Three major points can be made regarding the role of the phalanx at Mantinea. Firstly, again we encounter the phalanxes of both armies in defensive roles. The Achaeans deployed behind field fortifications and the Spartan made use of artillery, both requiring a stationary phalanx to be effective. Secondly, the flanks of each phalanx were important. In the case of the Achaeans superior training and organisation allowed their flank to be secured after an initial Spartan success which had caused wing supports to flee. It is perhaps important that the armies at Mantinea followed the normal Greek practice of the period by deploying very few horse. Had Machanidas had available a mounted force like that used by the eastern Hellenistic powers he might have been able to take more advantage of his successes on his right. Finally, the phalanx was at a grave disadvantage once it became

disordered. Once the Lacedaemonians had been disrupted by crossing the ditch they fell easy prey to the waiting, ordered Achaeans.

We now come to the period of Roman defence against Pyrrhus of Epeiros and the Republic's expansion to the east. During this period the *sarisa* phalanx faced a new threat, the manipular legion. Eventually the Hellenistic military system succumbed to that of Rome. During our survey we shall discover how the *sarisa* phalanx was largely unable to defeat the legion in battle. We shall see that the tactics of the phalanx were fatally flawed when faced by the mobile and flexible legion of Republican Rome. In order to understand the threat posed by the legion we shall make a general survey of its equipment and tactics.

The Roman legion that faced and defeated the Hellenstic powers was composed of three lines of heavy infantry supported by detachments of javelin-armed light infantry. In battle the latter were deployed as a screen in front of the legion. At the appropriate time this screen retreated to the shelter of the legion's main body as the battle came to hand-to-hand fighting. The first two lines, the *hastati* and *principes*, were equipped with a large body shield, a *scutum*, and armour - the type varied from man to man. The offensive weapons of these two lines were a number of heavy javelins, *pila*, and a sword. In battle these soldiers would advance on the enemy and discharge a volley of *pila* into the enemy's ranks. They would swiftly follow-up with the sword to take full advantage of any disorder caused by their missiles. The third rank, the *triarii*, used similar equipment to the first

two lines, except that it substituted a long thrusting spear for the *pila*. This line stood, or knelt, in reserve until it was needed to bolster the advance lines or exploit victory. The legion at this period fought in small sub-units of men, or maniples, in a chequer-board formation. This allowed for individual movement during sword fighting. Further the maniples could infiltrate enemy formations and fall back through one another, if pressed. The "concertina-like" ability of the legion gave it great endurance in battle as maniples could replace each other during combat and maintain the freshness of the men. Finally the legions had been tested to their full in the closing years of the third century by the Second Punic War; it was veterans from that war which formed the nucleus of the armies that fought Philip V and Antiochus III (149).

The first confrontation between legion and phalanx came at Heraclea in 280 B.C. Our analysis of this battle is complicated by the use of Italian allied contingents by Pyrrhus of Epeiros, some of which might have been tactically intermixed with his phalanx. The details of this battle are few, especially with regard to the role of the *sarisaphoroi*. In the battle the Romans are portrayed as very aggressive: they stormed across a river and carried the battle to the enemy with such vigour that the forward elements of Pyrrhus' army seem to have been taken by surprise. The Epierot phalanx was held back in this initial phase, the brunt of the Roman attack being borne by cavalry. The phalanx was only committed when the forward mounted elements were driven in by the Roman attack. This stabilised the situation

and the infantry battle became one of attrition. Pyrrhus only won the day after an attack by his elephants. The casualties were approximately the same for both sides, 13-14,00 men, an unusual occurence in ancient warfare. It is from Heraclea that we derive the phrase "Pyrrhic victory" (150). Again the phalanx was held in reserve until tactical circumstances forced it into action. Once committed the battle swayed to and fro for some time, six times we are told. A general note is the tenacity and staying power of the *legionarii*, a tendency that will become a common occurence in our study.

Pyrrhus' next confrontation with the Roman legions came a year later at Asculum (151). This encounter can be compared with the one at Heraclea since the Romans had obviously learnt some lessons from the first battle. At Asculum the Romans occupied broken and hilly terrain, with a river running across their front. They were clearly attempting to neutralise the Pyrrhic cavalry and perhaps the elephants. From our standpoint, however, it is also useful to note that the legion could fight on such rough terrain, whereas a phalanx would have fallen into grave difficulties. This tactic caused stalemate on the first day of the battle, the Romans fearing to leave their position, Pyrrhus to enter it. On the second day Pyrrhus contrived to lure the Romans down on to level ground, where a hard battle of attrition was fought, victory going again to Pyrrhus as a result of an elephant charge.

Several points emerge from the ancient accounts of Asculum. Firstly, Plutarch tells us that the Romans did not have the room either to avoid battle or to shift to meet attacks (152), the implication being that the Romans

would normally - using the flexibility of their manipular system - have manoeuvred out of dangerous situations. At Asculum, however, a congested battlefield forced them to meet the phalanx head-on. Furthermore we are told that the Romans wanted to destroy the Pyrrhic heavy infantry before the dreaded elephants could be bought up. As a result the legions threw themselves onto the enemy line with little regard for danger. They failed in this task, although they put up a long hard struggle, and the legions were already recoiling when the elephants were brought up (153). The phalanx was used in an essentially pinning role for another combat arm, the elephants. We must also note that the phalanx made a better fight in defence on the second day of Heraclea than it did on the first.

Plutarch tell us that Pyrrhus led forward his force in dense array at Asculum, implying use of *puknosis* or *sunaspismos*. Polybios adds that Pyrrhus deployed equal numbers of Italians with his phalanx, intermixing them in "alternate-*speirai*". The normal interpretation of this is that Pyrrhus tactically intermixed lighter Italians with his heavy phalanx, copying the flexibility of the Roman manipular system met the previous year at Heraclea. This tactical innovation is seen as a radical step forward by many modern commentators, despite the fact that Polybios goes on to say that the formation was useless against the Romans. Indeed such a formation - if it was actually used in combat - would only have served to disrupt the serried formation of the phalanx recorded by Plutarch.

There is also a problem with the equipment of the Italians troops to

whom Polybios refers. For the 'flexible-phalanx' theory to have any credence these Italians would have to be peltast-type troops, a conclusion the sources do not necessarily support (154). The only evidence for the equipment of the Italian contingents in the battle come from Dionysios of Halicarnassus' record of Pyrrhus' order of battle. Dionysios records that the large numbers of Italian troops in Pyrrhus' army were deployed and fought in separate contingents, but no mention is made of any special formation. Furthermore it is clear that many of these Italians were heavy infantry and some perhaps *sarisa* armed.

Dionysios tells us that the Tarentine contingent was called *leucaspides* and these men may have been re-equipped with the *sarisa* between Pyrrhus' landing in Italy and Asculum. Many of the other Italians were probably hoplites; a minority would have been peltast-type troops, notably those soldiers from the mountain regions (155). Therefore, even if Pyrrhus did use Epeirots and Italians intermixed, he may simply have been mixing Italian phalanx units with Epeirot in order to bolster the morale of the former.

It is difficult to reconcile the accounts of Dionysios, Plutarch and Polybios as to the use of "alternate-*speirai*" at Asculum or any of Pyrrhus' battles. If this formation was used then we need to examine the motives of Pyrrhus. Either Pyrrhus was experimenting with a flexible phalanx or he intended to bolster the raw Italian soldiers by intermixing them with his Epeirot veterans. In either case one should assume that small units would have been the basis of this mixed formation, perhaps *syntagmata* or the

equivalent. Unfortunately Dionysios' account does not support such an assumption, since he refers to large contingents of Italians.

Finally Polybios does not place his reference to the "alternate-*speirai*" in any specific moment in Pyrrhus' campaigns; Asculum is assumed to have been the point at which the new formation was introduced because it is the most logical candidiate. Heraclea can be rejected because it was the first meeting of legion and phalanx, and Pyrrhus would have not had the time to digest and copy the manipular system; Beneventum also, as it was fought in wooded terrain and on the march, the phalanx had a hard time in this battle and the tactical situation did not lend itself to experimentation. Asculum remains, therefore, the only logical opportunity to test Pyrrhus' new phalanx tactic. Despite its logic, however, this argument for the timing of the introduction of the new formation is still conjecture. Polybios wrote about Pyrrhus' use of the "alternate-*speirai*" as part of a technical digression and may have drawn upon information lost to modern scholars; for example we know that Pyrrhus wrote a technical treatise on warfare (156). Polybios may have been making reference to a theoretical formation, one which was never actually used in the field.

The evidence for Pyrrhus' introduction of a new phalanx tactic is therefore scanty and contradictory. Polybios may refer to a formation that existed only in a technical manual. None of the accounts of Pyrrhus' battles make any mention of a new phalanx formation composed of small, interlocking units of phalangites and peltasts. The sources imply that large

units of phalanx fought side-by-side in the traditional manner. As there is no exant historical support for Polybios' reference to "alternate-*speiral*" in any of Pyrrhus' battles, we must reject it as evidence for a revolutionary phalanx tactic designed to overcome the cumbersome nature of the phalanx and imitate the tactical flexibility of the manipular legion.

Pyrrhus' final battle against Rome came in 275 B.C. at Beneventum, but it tells us almost nothing about phalanx warfare (157). The battle was fought through wooded terrain, probably by the specialist light units of Pyrrhus' army. One might speculate as to how important a role the legion had in this encounter, and if even manipular tactics allowed heavy infantry to fight in such unfavourable circumstances.

The legion next met the phalanx in the Second Macedonian War. In the intervening period Rome had fought and beaten Carthage in the Second Punic War. The armies that invaded Greece and met Philip V in battle were tough veterans of this war. This factor should not be understated in our examination of tactics in this period.

The first encounter of the war was the storming of the Aoos pass, one of the main highways into Macedon from the west. As a mountain pass, Aoos was obviously broken terrain, and Livy also states that the defile was wooded. He records that this terrain hindered proper use of the phalanx, and in particular he specifically states that the phalanx needed an open, flat battlefield to make use of its 'very long spears' (*praelongis hastis*) and 'wall' (*vallum*) of shields. It is clear that Livy believed that the strength of the

phalanx derived from its *sarisai* and locked shields, perhaps the *sunaspismos* (158).

Livy also records that Philip's men had been training during the winter of 199 B.C., but despite this he also noted that the Romans had the advantage of discipline in the fighting in the pass. Furthermore he states that the Romans had better body protection, perhaps indicating an unarmoured phalanx on this occasion. To offset these Roman advantages, the Macedonians held a strong defensive position, which they reinforced by placing artillery to cover the approaches. It must be noted here that Livy makes no mention of any difficulties that the phalanx may have had in holding such broken terrain and we might speculate that the phalanx needed to be stationary to hold the pass - a role that would easily have fitted the tactical situation. Again the phalanx is deployed in defence, on this occasion stationary on terrain that would normally have disrupted its ranks.

At Aoos the Macedonians gave their phalanx considerable support. Along the flanks of the pass they deployed *psiloi*, who combined with the catapults to create a beaten zone in front of the line of *sarisai*. Philip held to this defensive plan, even failing to exploit a substantial local cavalry victory, and the Romans were forced to assault this position for several days. They, however, sustained heavy casualties and failed to break the phalanx frontally. The attack on the Aoos pass was not a set-piece battle, and it was logical for Philip to defend such a position. Despite this, however, Livy's narrative makes clear the effectivenes of a properly positioned and supported

phalanx. The main encounter of the Second Macedonian war was fought at Cynoscephalae in 197 B.C. The battle was not planned but escalated from a skirmish between advance bodies of both armies. As a result Philip V's *sarisa* phalanx was not formally deployed; rather it was fed into action as the battle developed (159).

The battlefield of Cynoscephalae was dominated by a large hill, on which the Macedonians positioned their line. The hill, which lent the battle its name, initially concealed the movements of the two opposing forces, a factor which was exacerbated by bad weather. As a result the first encounter of the action was between opposing light screens. A skirmish took place which ebbed and flowed up and down Cynoscephalae. At first the Macedonians managed to hold their own, but eventually the fight swayed in favour of the Romans. It was at this point that Philip began to commit his phalanx (160).

The phalanx marched to the field in column and as Philip had little intelligence as to the progress of the fighting on Cynoscephalae, we must assume that his infantry followed normal Hellenistic practice and was moving in the most dispersed of the phalanx formations with six feet between each man (see the discussion above at note 88). The phalanx would have marched with a very narrow frontage and with each sub-unit strung out one behind each other. In particular the *lochagoi* would have been in the front ranks with each sub-unit being many files deep; the *lochagoi* would not have marched along the flanks of the phalanx.

As the phalanx entered the battle area, and the situation became clear to Philip, it was deployed for action. The mechanics of this manoeuvre are unclear. Polybios says that the leading ranks occupied the head of the pass, a defile where the road crests Cynoscephalae, immediately turned to the left and were inserted into the line of battle (161). Taking note of the march formation of phalanx, this manoeuvre could not simply have meant the column moving onto the hill, turning and snaking along the crest and then once in position each man turning to face the enemy. Some drill must have been used to pull the phalanx from its route-column into battle formation whilst placing the *lochagoi* in the front rank. Two alternatives might reconcile Polybios' account with our knowledge of the mechanics of *sarisa* warfare. Either the phalanx marched along the crest, as suggested above, and each sub-unit wheeled to the left and into the line. More probable, however, is a drill known to Xenophon and used by Alexander at Issus, which fits closely with Polybios' statement that units were inserted into the line directly the lead unit had reached, and presumably halted on, the crest. This manoeuvre would slowly convert column to line as each unit moved to take station to the right of its leader (162). The latter is more consistent with our knowledge of phalanx drill as it would have allowed the phalanx to deploy without presenting a flank to a victorious enemy and form with the *lochagoi* in the front rank.

At this point in the action the right wing of the phalanx was deployed into a line of battle facing the Romans. We must assume that it retained its

march density of six feet per man (again note the discussion at note 88). The Macedonian skirmishers, still fighting below the phalanx at the foot of Cynoscephalae, then broke under the Roman pressure and fled. It is clear from our accounts that these soldiers did not flow through the phalanx; rather they veered to pass around the right flank of the phalanx (163). We might conjecture that this was forced upon the *psiloi* by an absence of gaps between sub-units in the phalanx, or because of the complex manoeuvres being performed by the phalanx at this point in the action - see below.

The phalanx now readied for combat, and here Polybios' account becomes difficult to understand. He says that says that, "...he ordered the peltasts and the phalangites to double their depth ( τοῖς δὲ πελτασταῖς καὶ ) and compact to the right ( τοῖς φαλαλλίταις παρήγγελλε διπλασιάζειν τό βάθος καὶ πυκνοῦν ἐπὶ τὸ δεξιὸν)." (164). This manoeuvre is very difficult to understand, but clearly its intention was to prepare the phalanx for combat as Polybios' account immediately follows on with the order to lower *sarisai* and charge the enemy who were by this time almost upon the phalanx. Walbank interprets it to mean that the Macedonians doubled the depth of their phalanx from a marching depth of eight to a fighting depth of sixteen and then reduced the frontage of each man from six to three feet by counter-marching or compacting (*puknosis*). This conclusion is, however, difficult to reconcile with the situation. Given that the phalanx had arrived on the scene in column-of-march it would have already been in a deep formation prior to this drill evolution, negating any reason to double the

phalanx as Walbank suggests. Alternatively the commanders of the various sub-units had taken it upon themselves to form the phalanx up for battle as soon as their respective sub-units had taken up their position on the crest of Cynoscephalae (described above), removing the drill evolution whereby the phalanx's depth was reduced from that of a column-of-march to a combat formation from Polybios' account. After all we have already seen how quite complex manoeuvres were the responsibility of the lower echelon commanders, for example at Issus. However, once again a discrepancy arises: unless these sub-units commanders had been incompetent the phalanx would have already been in fighting formation making Polybios' reference an irrelevance. The problem arises from Polybios' simultaneous reference to doubling the depth and compacting the front of the phalanx: both appear exclusive terms i.e. one reverses the other. Therefore unless we are to assume that Polybios means that the Macedonians doubled the depth of their phalanx by countermarching, only to immediately undo the action by compacting, we have to look elsewhere for a solution, and that lies in marrying what we know about Hellenistic drill nomenclature with the tactical situation on Cynoscephalae.

Asclepiodotus gives an alternative interpretation for doubling (165). He records that the drill could be used to extend the front of a phalanx with the intention of outflanking the enemy. This being the case Polybios' account makes sense and the action of Cynoscephalae can be reconstructed as follows. The phalanx had moved into position on the crest of the hill (see

above). However with the flight of the *psiloi* and cavalry the situation became critical; note that Polybios records how close the victorious enemy troops were to the main Macedonian line. The phalanx extended its front to the right to prevent an enemy enveloping manoeuvre. Presumably this was done by each sub-unit moving individually by wheeling and marching, a dangerous manoeuvre given that it would probably partially expose the flanks of the sub-units to the enemy. Once in its new position the phalanx realigned its facing and compacted to assume its attack formation. This interpretation of events is supported by the fact that Philip formed the remnants of his skirmish screen, which included peltasts - troops that were ideally suited to covering the phalanx's flank - , on his right. Also the second half of Philip's phalanx was in position to deploy to cover the exposed left of his already engaged right flank. Livy's account, for what it is worth, records that the phalanx was reinforced to prevent the battleline being broken referring to some action by the Macedonians to avert disaster. Finally, Plutarch supports the case that the phalanx was properly formed before it charged; he records it formed in *sunaspismos*. To summarise, Polybios refers to a drill whereby the phalanx was shifted sideways to protect its flank; a dangerous, but not impossible, manoeuvre in the face of the enemy and a testament to the training of Philip's troops (166).

Having deployed, the phalanx began its attack, in *sunaspismos* formation if we accept Plutarch's evidence. The order to lower *sarisai* was given, misunderstood by Livy, and the phalanx advanced down the hill. The weight

of the phalanx and their special formation forced the Roman line back, but did not break it (167).

It is at this point that the battle began to move in favour of the Romans. On the left of the Macedonian army the second half of the phalanx arrived, but this force could not deploy quickly enough and Flamininus, the Roman general, launched a rapid attack with his right. His *legionarii* followed up a preparatory attack by elephants and the phalanx broke and fled, hardly striking a blow, caught as it was undeployed and disordered by a combined arms attack. Polybios stressed the poor command control of the Macedonians on their left; other sources point to poor terrain (168). It is worthwhile to contrast the performance of the two wings of the Macedonian army. On the one hand the right, which was under Philip's personal command, reacted rapidly to a developing situation. This half of the phalanx quickly assumed its compact formation from a column-of-march by a series of complex drill evolutions. It attacked the Romans with vigour, reversing a tactical situation that had almost been lost. On the other, the left was forced by its late arrival - one assumes it was the rear half of the reinforcing column - to enter the battle unprepared. We must note, however, Flamininus' tactical foresight at this juncture. He realised that the phalanx had to be attacked and dispersed quickly before it could form-up. In order to accomplish this he prepared the way with elephants, creatures that would have caused havoc amongst unprepared troops. This initial attack was then exploited by the legions, who swept the phalanx from the field. Here the strength of a properly formed

phalanx is contrasted markedly with the weakness of unformed *sarisaphoroi*. Finally the actions of the Macedonian right at Cynoscephalae proves it was possible for the phalanx to engage in rapid and successful drill evolution in the face of the enemy.

As the Roman right followed up its victory it outflanked the victorious Macedonian wing. As the opportunity arose a Roman tribune detached the rear units - one assumes *triarii* - and directed them at the unprotected rear of the Macedonian right (169). All military units regardless of tactical doctrine, weapons etc., are at a disadvantage in such a situation and the phalanx broke in flight. We must note how vulnerable a *sarisa* phalanx would have been in such circumstances. Its men would have been locked together in their compact formation, and it might have been simply impossible for many men to turn to face this new threat.

To conclude, Cynoscephalae underlines how dangerous a phalanx was to an enemy facing its front and how utterly weak it was when attacked from flank or rear. We must also note that on the Macedonian right the phalanx attacked, much like Polybios recommended Eucleidas should have done at Sellasia, and that this attack was conducted with the phalanx locked into the *puknosis* formation, or even *sunaspismos*; if we are to believe Plutarch. Until now we have highlighted the defensive attitude of phalanx commanders. Cynoscephalae proves the phalanx could carry the battle to the enemy if a commander so wished. A cautionary note must, however, be sounded here. As at Sellasia, Philip V was faced with a deteriorating situation, and as such

his infantry assault may have been dictated by circumstances rather than design. Further, this attack was not entirely successful: it soon ran out of impetus and ground to a halt at the foot of the hill. The Roman left was able to absorb and contain this attack of the phalanx. Perhaps the manipular formation saved the day here, and eventually the flexibility of the legion gave Flamininus victory - the best example of this being the detachment of part of the legion to attack the rear of Philip's wing, a feat certainly beyond the capabilities of a Hellenistic phalanx.

In 198 B.C. a Roman force was besieging the town of Atrax. An important incident occurred during the fighting which demonstrates the defensive capabilities of a phalanx when it could fight in ideal conditions (170). A phalanx held a gate against a Roman attack whilst deployed, according to Livy, in *cuneus*, a word translated as "wedge" or "deep formation". Wedges are encountered in Hellenistic warfare as army, not sub-unit, formations and thus we can be certain that Livy meant here that the phalanx was deployed in a deep formation. The Roman infantry, which we must assume were *legionarii*, advanced toward the phalanx and discharged a volley of *pila* into its ranks. Livy says that the phalanx was like a *testudo* and the volley was totally ineffective (171). This is curious as the Roman *testudo* was a close square in which the *legionarii* held their shields in such a manner as to cover all the sides and the top of their formation. This task was in part facilitated by the large body-shield, the *scutum*, carried by republican and early Imperial *legionarii*. The Macedonian phalanx, as we have seen, carried

a small buckler, a shield totally unsuited to a formation anything like a *testudo*. Livy obviously does not mean that the phalanx was literally in *testudo*, rather that whilst in *sunaspismos*, its frontal defensive qualities were much like the all round strength of the *testudo*. Even so, the small *pelte* carried by the *sarisaphoroi* would have had great difficulty in stopping an armour piercing javelin such as a *pilum*. A closer reading of Livy reveals that the *sarisai* of the phalanx may have helped in deflecting missiles. Livy may be implying that the *sunaspismos* formation presented such a hedge of *sarisai* to the front, five per one and a half feet of front, as to deflect missiles. Polybios tells us of a similar phenomenon: the rear ranks of a phalanx held their *sarisai* at an angle to deflect missiles falling on the phalanx (172). The *sunaspismos* formation may have, therefore, been able to protect against missile as well as hand-to-hand attack. Further, if the *sunaspismos* could stop a weapon as effective as a *pilum* then what chance had a light missile, javelin or arrow, of reaching its target?

The incident at Atrax is important because it shows the phalanx in an ideal defensive position. Livy makes the point that the phalanx was firmly ensconced in the gateway and that the Romans could not manoeuvre to out flank it. Such a position demonstrates what a supremely strong defensive formation the phalanx was.

The next battle of interest is Thermopylae, fought in 191 B.C. (173). A Seleucid army of approximately 10,000 phalangites and a small number of cavalry crossed to Greece in 192 B.C. and was joined by Greek allied forces.

This combined army moved to halt a Roman march into the south of the country at the pass at Thermopylae. This battlefield is well known. Briefly it is protected on the north by sea, on the south by mountains. The tactical situation was much like that faced by Philip V at Aoos.

Livy and Appian have both left accounts of the battle, but they differ in detail, particularly the role and activities of the Seleucid phalanx. Both agree that a fortification was thrown across the pass (174). This construction was substantial and artillery was mounted on its ramparts to shoot over the heads of the troops deployed in front of it. According to Livy the phalanx was deployed around the fortification, but it is clear from his account of the battle that only part of the phalanx was actually at the wall; most must have been deployed in front of the wall as later in the narrative they retreated into the fortification. Further in order that this could be accomplished successfully gaps of some size and/or number must have been left in the wall (175).

Both sources agree that light troops were deployed in advance of the phalanx. These eventually retired and Appian wrote that the phalanx separated to let them through. We have already met this drill in the theoretical writings of the tacticians and in action at Sellasia. At Thermopylae either the *psiloi* retreated through gaps between sub-units or along files when the phalanx was in its loosest order. Either could be the case as the phalanx was not being actually engaged when this manoeuvre took place. The important point here is that the phalanx could use a drill evolution to allow *psiloi* to pass through its line (176).

The sources diverge once the battle proper began. Appian's account places the entire phalanx in front of the wall and his narrative of the battle rests on this assumption. The *psiloi* retired through the phalanx which then closed its ranks to form a compact battle line; presumably either *puknosis* or *sunaspismos* was formed to meet the Roman attack and the Romans were thoroughly frightened at having to face so many spears (177). The legions could not penetrate this line frontally and it was left to a force under Cato which used a secret path, much like the Immortals in the Persian Wars, to outflank the Seleucid position. The phalanx broke in flight as soon as it discovered its predicament.

Livy's account is somewhat different. Only part of the phalanx stood in the open to meet the Romans. They, with missile support from troops on the rampart and to their flanks, easily repulsed the Roman assault. As pressure increased the phalanx slowly withdrew inside the fortification. As with Appian's account the eventual appearance of Cato in the Seleucid rear caused the defence to fall into disorder and flee. It is noteworthy that Livy emphasises how formidable the line of *sarisai* were in defence; he says that they were like a wall (178).

The two accounts probably derive from the same source, perhaps lost portions of Polybios. They are only generally similar, recording two versions of a Seleucid attack, followed by a circumspect retreat and defence. Certainly such tactics would fit those recommended by Polybios at Sellasia, although the ground upon which the two battles were fought is different. The writer,

however, would prefer to accept Livy as the more reliable of the two sources. The fortification of the pass would have been a formidable feat of military engineering and could only have been built after great effort. As such, one would have expected it to form an important part of the Seleucid battle plan and only Livy gives it such a role. It is therefore logical that Antiochus intended a tenacious defence, rather than any attack that might have gone wrong and compromised his phalanx. Both accounts, however, refer to a serried line of *sarisai* as being the key to a strong defence.

The Romans followed their victory at Thermopylae with an invasion of Asia Minor under Lucius Cornelius Scipio (later Asiaticus). This campaign culminated in the battle of Magnesia, 189 B.C. (179). Appian and Livy again provide our narrative, both deriving from a common source - probably Polybios.

Livy's account concentrates on certain critical points of the battle and as a result we are left with a rather distorted view of events. In general Livy leaves us with the impression of a battle of very short duration. His account opens with an attack by, and the flight of, the Seleucid left. Fugitives from this debacle fled towards the still intact phalanx, which held the centre. These unfortunates attempted to gain shelter in the phalanx but were hindered by the long spears ('*praelongarum hastarum*') of their comrades. The legions took advantage of the confusion caused by this, they closed in and hurled their *pila* into the disordered ranks of the phalanx. Elephants, which had been deployed at intervals in the phalanx, were wounded by these missiles causing

the animals to become uncontrollable. The legions then charged into the confused mass and swept the phalanx from the field. Livy records that more Macedonians were killed on this day than in any other encounter between legion and phalanx.

Appian follows Livy closely with the rout of the Seleucid left, but here his story diverges; in particular, the role of the phalanx in the battle is very different. He records, like Livy, that elephants were mixed into the phalanx, making it look like a city wall with towers. He also criticises the deployment of the phalanx as too deep at thirty-two men, and too densely packed (180). Appian probably refers to the depth of the phalanx when combat took place, after any counter-marching. The depth may have been caused by the problems of deploying such large numbers of men in a confined space rather than by an attempt to compensate for bad quality troops, as later Appian comments on the high state of discipline of the Seleucid phalanx.

In Appian's account, after the Seleucid cavalry fled the phalanx formed square and the line of *sarisaphoroi* opens ranks to allow fugitive *psiloi* into their protective formation, directly contradicting Livy's panic flight onto levelled *sarisai*. The Roman *legionarii* were afraid to approach the square, fearing the solidarity, discipline and desperation of the veteran Seleucid foot soldiers. The Roman cavalry then rode around the square, shooting at it with missiles. Appian tells us that the *sarisaphoroi* were enraged at this, not being able to use their military skills. Eventually the elephants stationed amongst the phalanx became frightened and they threw the infantry formation into

disorder and as we have seen in other battles, this spelt the end for the phalanx (181).

Of the two accounts this writer would prefer Appian. Livy assumes a very pro-Roman stance in all of his writings. His account of Magnesia portrays an easy victory for the legions over an immense eastern army. This conceals what was probably a very hard-fought battle. Livy omitted the long fight against the phalanx as this would have detracted from Rome's victory over the Seleucid empire. Appian's account has no such bias in his account of the infantry battle although, as will be shown later, he may have joined Livy in failing to record the victory over one of the allied legions by the Seleucid guard cavalry. Of all the Hellenistic military establishments, the Seleucid was probably the best, and it is consistent with our knowledge of this well-tried army that its phalanx should have put up a stiff fight against the legions. It is noteworthy that the two sources agree on events whilst the tide flows in Rome's favour, but differ when the legions meet with difficulties. It is clear how these, recorded in Appian, were manipulated by Livy to present Magnesia as a great Roman victory.

Other problems require attention before we can sum up the role of the phalanx at Magnesia. Firstly, the number of soldiers in the Seleucid phalanx is open to question. This writer believes that two blocks of infantry phalanx were deployed by Antiochus. On the right centre were 10,000 *élite argyraspides*; on the left were 16,000 colonist phalangites, giving a total of 26,000 *sarisa*-armed infantry in the Seleucid line (182).

Secondly, the phalanx was deployed in two corps, rather than one block as was normal in Hellenistic warfare. Cavalry separated the *argyraspides* from the colonists. We shall discuss this in more detail later; suffice it to say here that this cavalry had to deployed in the centre as there was no room on the Seleucid right flank for its use. The phalanxes were split as a result of terrain considerations rather than as a novel tactical ploy (183). Thirdly, elephants were placed in gaps between phalanx sub-units at intervals along the entire front. The motive for this deployment is not clear. The effect would have been to split the phalanx into sub-sections, but this does not appear to have achieved anything. For example, the phalanx did not acquire any additional flexibility. It may be that this ploy was intended to strengthen the defence, but this line of thought is tenuous, being based on Appian's reference to the elephants looking like the towers along a city wall (184). Little can be drawn from this scheme; suffice it to say that the deployment was novel. In all other Hellenistic battles elephants were used as a separate force, often in a chain across the front of the phalanx.

Magnesia gives us several insights into the use of the *sarisa* phalanx in battle. The phalanx managed to allow *psiloi* to pass through its ranks during the very crisis of the battle. It managed rapidly to realign and form a strong defensive formation when supporting troops fled the field. Although it was possibly packed into a close area due to lack of space, nevertheless, as in other battles it appears to have been deployed in a defensive stance. The Roman *legionarii* were unwilling to approach the phalanx, even to within

range of their *pila*, whilst it was in this formation. Again the defensive strength of the *sarisa* phalanx is underlined. Despite its defensive strength, however, the phalanx was eventually defeated. This was due to two factors that can be applied to all Hellenistic warfare. Firstly, the phalanx needed support troops: without these it was prone to stand and be shot down with missiles with no means of reply. Secondly, the introduction of elephants into the ranks of the phalanx served only to disrupt the all important tactical integrity of the phalanx's formation.

Finally we come to the battle of Pydna which saw the final eclipse of the army of Antigonid Macedon (185). Perseus, king of Macedon, deployed an infantry force of some 40,000 men. He and his father had prepared the kingdom carefully for war, the country's manpower base had been expanded, equipment stockpiled and soldiers trained. The army of 169 B.C. was perhaps the best Macedon had produced since the days of Philip and Alexander (186).

The Macedonian phalanx was deployed some way behind a stream and Livy comments that Perseus made his infantry ineffective as a result. Plutarch, in contrast, believed that the battle area had been specifically chosen for the Macedonian army. There was a plain for the phalanx to operate in, surrounded by rolling hills for outflanking attacks by *psiloi*. Two water courses scored the field, the Aeson and Leucius rivers, but at the time of the battle their water level was very low. Plutarch records that these were intended to provide an obstacle for the Romans rather then for the phalanx. The geography of both sources are correct; Perseus' battle plan is all that is

in doubt. Given the pro-Roman bias of Livy this writer would prefer to accept Plutarch's version of Macedonian intentions.

The preliminary phase of the battle was a skirmish between the light screens of both armies. After this the heavy infantry forces of both sides closed for combat. At this point we experience problems with Livy's sequence of events. Livy progresses straight to the point where the battle turns in favour of the Romans. He records that the phalanx was disrupted by a combined attack of *legionarii* and elephants and that eventually the Macedonian line cracked and broke under the strain. Plutarch perhaps better preserves the first phase of the heavy infantry melee. His account has a rapid opening to the battle as the Roman infantry closes on the phalanx at speed, but they soon meet with a check. The phalanx had readied for battle, and lowered its shields and *sarisai*. The Roman commander, Aemilius Paullus, noted the strength of the Macedonian formation and it greatly frightened him. It is possible that Plutarch records a reaction to the sight of a phalanx in *sunaspismos*. As a result of the phalanx's peculiar formation, the initial Roman attack was unable to penetrate the Macedonian line (187).

How do we reconcile these two accounts? It is clear from Livy that he, or his sources, believed the Macedonian phalanx was a force to be feared. He says that the phalanx was invincible whilst formed and bristling with spears. Once disrupted, however, the *sarisaphoroi* had to swing their *sarisai* from side to side, the result being a haphazard mess of men. Livy applies these comments directly to Pydna and he records that had the Romans maintained

a solid front then they would have impaled themselves on the Macedonian weapons (188). Livy's general comments on phalanx warfare compare favourably with Plutarch's account of the early period of the battle. It is therefore probable that Plutarch's description of the early reverses of the Romans are correct and Livy preserved them only in his general observations on the phalanx. Livy's motive is clear, the pro-Roman bias that is so common in his writing.

We can, as a result, reconstruct the battle as follows. The Roman line advanced upon the Macedonians and fell on the phalanx with a will. Both sources record the heroic action of the Paelignians, Plutarch adding that their commander, Salvius, threw the unit's standard into the enemy ranks to encourage his men. Urged on by this action the Paelignians launched a furious assault on the enemy line, but to no avail. Plutarch records that the Italians tried to push the Macedonians back with their shields, but the Macedonians held their weapons firm and pushed back. Their *sarisai* easily pierced the Italian defences; neither shield nor armour could protect them. In effect the Paelignians helped impale themselves on their enemies' weapons.

Only when Roman troops fell back in front of the phalanx did they have any success. The Macedonians followed up their initial success, but the rough ground soon began to disorder their ranks. The Romans took advantage of this by moving into any gaps created. The sources say that this was done on the initiative of the centurions. Frontinus adds that the Roman line was in wedge, and if this is true, the Romans used a formation that was specifically

designed to penetrate enemy formations (189). The Romans were allowed to approach within range of their swords and the mutual support afforded by the phalanx's formation, which had until this point kept them at a distance, began to collapse. Plutarch clearly recounts that the *sarisa* and *pelte* used by the *sarisaphoroi* were no match for the large Roman *scutum* and Spanish sword. From this point on the Romans slowly infiltrated the phalanx, broke it up and destroyed it.

Pydna is the best illustration of the strengths and weaknesses of a *sarisa* phalanx when confronted by the Roman legion. At Pydna the two tactical systems met without outside interference. For example, at Cynoscephalae one might argue that the use of elephants with their legions won the day for the Romans. At Pydna the Macedonians appear to have again deployed their phalanx in an essentially defensive position, hoping that a river course would disorder the Roman attack. Whilst stationary the phalanx was invulnerable to Roman attacks; indeed in launching such attacks the Romans invited heavy casualties. Plutarch tells us that the phalanx was formed up in the closest of formations; Frontinus adds that the phalanx was "doubled" at Pydna (190). We can conjecture that the phalanx was formed in *sunaspismos*. The defensive strength of this formation is underlined by the opening phases of Pydna. Its weakness, however, soon became apparent once the phalanx came to advance. The terrain of Pydna soon produced enough disorder to open out the phalanx. Into the gaps created advanced the small maniples of the Roman legions. Once inside the Macedonian weapons, it was only a matter of time

before swordsman triumphed over *sarisaphoros.* In *sarisa* verses *sarisa* battles this weakness is not apparent, but clearly the flexible tactics of the Roman manipular legion allowed it to firstly to fall-back in front of the phalanx, secondly to infiltrate its ranks. We must, finally, note that Pydna was a victory for infantry; most of the Macedonian cavalry escaped intact, suggesting a minor role for them in the battle (191).

D) Conclusion

The key to Hellenistic warfare was the concept of combined arms. Hellenistic armies were composed of many types of soldier: all performed a special role on the battlefield, and each also fitted into an overall scheme that emphasised mutual support. Thus a full evaluation of the phalanx must wait until we have reviewed the Hellenistic military system in full. At this juncture it is hoped that certain basic principles of phalanx-warfare can be established in preparation for our overall, concluding chapter.

Hellenistic military systems followed the normal Occidental practice of fielding large numbers of heavy infantry. In this respect they followed the Classical Greeks and the Romans. How the *sarisa* phalanx differed was in its equipment, tactics and the source of its manpower. All three combined to make the *sarisa* phalanx unique, with its own advantages and disadvantages. When opposed by a Classical hoplite phalanx, the former predominated, when by a Roman legion the latter. Our first task is to quantify these peculiarities.

The single most influential advantage of *sarisa* warfare was the manner in which large numbers of phalangites could be deployed from the lower classes of Hellenistic society at short notice. This factor runs through the entire history of the *sarisa* phalanx. As we have seen, Philip II's Macedon owed its survival and eventual rise to power to the creation of an effective infantry force composed of peasants who until that point had been useless in a set-piece battle. The story is repeated time and again through the period.

The reason for this ease of recruitment was the inexpensive nature of *sarisaphoroi* equipment. Armour was rare for these troops and in the final analysis the soldier only needed a *sarisa* and a *pelte* to take his part in the phalanx. The result of this factor was that Hellenistic phalanxes were very large, especially when compared with the manpower potential of a state that relied on the hoplite system. The effects of this were twofold. Firstly, the *poleis* of Classical Greece could not match this mass of men; secondly, once the *sarisa* system had become commonplace, states had to reform to the new order or face relegation to the status of second class power. Examples of this have already been examined, notably Achaea under Philopoemen and Sparta under Cleomenes III.

Another great benefit lent by the *sarisa* was the great strength of the phalanx when in defence. These long pikes prevented any enemy coming to close quarters in any effective number. Indeed, as we have seen at Pydna, enemy troops were risking impalement on the *sarisai* if they pressed their attacks too hard. The ancients wrote that the phalanx was invulnerable in

defence (see the discussion of Atrax above for an example) and although this is, of course, an exaggeration, it is not altogether far from the truth.

The defensive strength of the *sarisa* phalanx extended even to missiles. No phalanx was adversely affected by missiles shot at it on the battle-field; even the heavy Roman *pilum* seems to have had little effect on formed *sarisaphoroi*. The phalanx was, therefore, a very firm tactical anchor, one which was virtually impregnable from the front.

Some phalanxes could also complete very complex tactical evolutions and manoeuvres. This varied from army to army depending on the experience of the soldiers concerned. Notable examples are the expansion of Alexander's phalanx as it left the defile at Issus, and the way in which Philip V's right wing phalanx deployed for action at Cynoscephalae. Ability to manoeuvre can also be illustrated by Machanidas's deployment from road-column to battle- line and Philopoemen's redeployment of one part of his phalanx to protect his left at Mantinea.

As we have seen, the complex drill in the tacticians facilitated rapid changes in phalanx formations. Also the sub-unit organisation used by the more advanced Hellenistic armies made the phalanx less of a single block of men, more a chain of units. This allowed for deployment and to some extent realignment of the phalanx. One can presume that only the more experienced armies could use these advantages to the full, and it is probable that a newly raised phalanx could do little more than shake itself into line before battle and lower its *sarisai* to meet an enemy attack. As such this writer would

prefer to view the tactical flexibility of the Hellenistic phalanx as a luxury experienced by only some well-trained or veteran infantry of the period. It is noteworthy that Hellenistic phalanxes did not suffer adversely from a lack of these advantages, as they were not necessary for the inherent defensive strength of the phalanx to play its role in battle.

Many of these advantages also caused the potentially crippling weaknesses of the *sarisa* phalanx. The phalanx was only strong when it remained ordered. The ancients quite clearly believed that a disordered phalanx was at a crippling disadvantage. Thus all tactics centred on retaining the integrity of one's own phalanx, whilst disordering that of the enemy. Such tactics were dangerous to the formed phalanx because it was so easily disordered.

The equipment of the phalanx was only suited to combat at the tip of the line of *sarisai*. If enemy troops could get beyond this point they could cause immense damage. As we have seen the majority of *sarisaphoroi* wore little armour. Their shields were small and fixed to the forearm; they could not be moved like a buckler to protect the soldier. Further the *sarisaphoros* had little training for close hand-to-hand combat. This would have been most noticeable amongst the newly raised, lower class phalangites who would have had no training whatsoever in this regard. In contrast, Roman *legionarii* were expert swordsmen and even hoplites - who had little formal weapons-training - would have been far better equipped than Hellenistic phalangites for close action. The long *sarisa* which was so effective when the enemy was at a

distance, became a liability at close quarters. One might have thought that *sarisaphoroi* would have dropped these unwieldy weapons and drawn side arms, but this would have caused even more confusion. Thus for the phalanx to be effective, a solid line of *sarisai* needed to be presented to the enemy, and this solid line would become dangerously weakened if any disorder appeared in the ranks. Once this happened enemy infantry would have the chance to dodge past the *sarisai* and close in on the inadequately equipped *sarisaphroi.* How then was disorder caused?

The phalanx was only strong if attacked from the front; attacks against flanks and rear would throw an entire line of phalanx into disorder, thereby allowing a successful frontal assault. It became a basic tenet of Hellenistic warfare that the flanks of a phalanx must be protected at all times. In the worst cases phalanxes would surrender once their flanks became exposed. Why was this the case? It is a general military rule that by outflanking an enemy one gains advantage. This is normally because armies are much narrower than they are broad; thus greater numbers can be applied to an exposed flank. In the case of the *sarisa* phalanx this was made worse by the fact that the drill of a phalanx did not allow it to readily redeploy to face to the side. Indeed, the only real example of a general attempting to cover his flank was Philopoemen at Mantinea. He moved a sub-unit out of the line and wheeled it to face to the left. As it was, his enemy's (the Spartan) victorious wing did not close in and envelop the Achaean phalanx, preferring pursuit and loot to combat. As we have seen, the complex drills recorded in the

tactical writers did not allow for reorientation in any other direction than front. Further once *sarisai* were lowered the ranks of the phalanx must have become locked together, the length of the spears preventing any sideways movement by the *sarisaphoroi.*

The rear of the phalanx was obviously vulnerable. One might argue that the drills recorded by the tacticians might have allowed a phalanx rapidly to about turn. This writer would agree with such an argument, but would point to the fact that a phalanx would find it impossible to face to the rear when fighting or even threatened frontally. The best example of this situation is Cynoscephalae when the victorious Roman right detached maniples of *triarii* to attack the rear of the Macedonian right.

Perhaps the worse situation that caused disorder was movement over difficult terrain. This happened so often as to prompt the conclusion that even relatively uneven ground could disorder a *sarisa* phalanx. We have seen that Hellenistic infantry formed on very narrow frontages and this may have been the cause of this disorder. Polybios in his treatise on the phalanx believed that it was very difficult to find a battle field to accommodate the peculiarities of the Hellenistic phalanx (192). An examination of the topography of Hellenistic battle-sites demonstrates that often commanders were willing to risk their phalanx on ground that was perhaps unsuitable for anything but a cautious advance, presumably with frequent halts to dress ranks. Clearly Hellenistic generals could not contrive to meet their enemies in better areas, since these were too few for it to be realistic to manoeuvre an

enemy on to them.

This being the case we come to the rather odd conclusion that the *sarisa* phalanx was unsuited to fighting on most of the ground in the Hellenistic world! It is clear, however, that the advantages of the phalanx outweighed this factor. Further, Hellenistic generals were very cautious how they used their phalanxes. We have encountered this tendency in many of our battle surveys. Given this, how can we reconstruct the tactical doctrine that dictated phalanx deployment and employment? To successfully answer this question we have to re-examine the three types of opponent faced by the *sarisa* phalanx.

Against hoplites the *sarisa* phalanx had a hard fight. It is clear from our battle reports that the *sarisaphoroi* were expected to hold in position on the battlefield. Their role was to pin the enemy hoplites, a mission for which a hedge of *sarisai* was admirably suited. It appears that they were generally successful at this so long as no aggressive moves were planned. The weakness of the Classical military system was a marked lack of good cavalry, an arm which the Macedonians had in abundance. The hoplites could not close with the *sarisaphoroi* whilst the latter's ranks held and it was only a matter of time before the Macedonian horse enveloped the hoplite army. It is clear from Classical literature that the hoplite army could move at the run across the battlefield. Not so *sarisaphoroi*. As has been seen, when expected to move forward Hellenistic phalangites suffered disorder and heavy casualties. This writer would argue that more crippling reverses were not

experienced when fighting hoplite armies simply because of a lack of effective cavalry in the ranks of the *poleis'* armies. Where the *sarisa* phalanx held the advantage over the hoplite-phalanx was in numbers, an ability to deploy large numbers of proletarian soldiers. This, linked with the aristocratic cavalry of Macedon, proved the demise of the Classical military system.

When *sarisa* met *sarisa* both sides tended to face one another off. The cautious tactical employment of the phalanx led to a holding action in the centre. This is most marked at Sellasia and Mantinea. Here the phalanx stood behind field fortifications waiting for an enemy attack. Under normal conditions phalanxes were only committed to action when events elsewhere on the battlefield dictated no other course of action. It was normally the threat of envelopment that forced the hand of the losing general. Again the best example of this is the actions of Cleomenes III's phalanx at Sellasia. Of course there were exceptions, stupidity being a common cause of military catastrophe. At Mantinea the Spartan phalanx rashly advanced across a ditch to come to grips with the Achaeans, and was disordered and slaughtered despite the fact that the Spartan army had successfully outflanked the enemy left.

Given the caution of commanders and the tendency to commit the phalanx when no other alternative was available, can we conclude that *sarisa*-armed infantry were superfluous in the mid- Hellenistic period? The answer to this question is a firm negative. It is the case that combat arms

other than the phalanx seem to have been more important in this period. However it is also the case that they still needed the base afforded by the phalanx to operate successfully. Further, as in the the Classical period, battle could only be won by the defeat of the enemy's heavy infantry, and in the majority of our battle accounts this mission was accomplished by another phalanx, supported by other combat arms. The great tactical difference was that commanders would hold their phalanx in defence until the very last moment.

The attack of the phalanx was, therefore, the essential part of most Hellenistic battles. On some occasions this attack was successful, as with the Ptolemaic infantry at Raphia, on others unsuccessful, for example the Spartan right at Sellasia. To ensure victory in this phase of the battle Hellenistic commanders resorted to brute force. As defence was stronger than attack one needed to entice the enemy phalanx forward. Commanders would attempt to create a tactical situation where the enemy infantry had to be committed. Usually this meant outflanking the enemy centre and thereby threatening flank or rear attacks on the enemy phalanx. Two examples can be used to illustrate this point. Firstly, at Sellasia where Antigonus won the battle on Euas with semi-heavy, rather than phalanx, troops. Secondly, at Raphia, where the quality and numbers of the Seleucid cavalry gave Antiochus III the upper hand from the start.

Numbers and weight of formation could also be used to affect the infantry combat. Again Sellasia and Raphia provide our examples. At the

former a stationary Macedonian phalanx assumed a deep and compact formation to defeat the attacking Spartan *sarisaphoroi*. At Raphia the reverse was the case: masses of newly raised Egyptians were used to give the attacking Ptolemaic infantry an advantage in numbers that off-set any disorder caused by movement. Further on this occasion Ptolemy V provided important leadership, standing with his foot at the crisis of the battle, whilst Antiochus III rode off the field with his cavalry. We must emphasise that by far the most effective tactic was to force the enemy's hand by gaining tactical advantage elsewhere on the battlefield.

The *sarisa* phalanx consistently fared badly when opposed by the Roman legion. Even the 'victories' of Pyrrhus were little more than bloody 'winning draws' for the Hellenistic military system. It is clear from our sources that a phalanx in a stationary, defensive position was a formidable opponent for the legion. Victory only came to the legion when the phalanx's serried ranks could be disordered. This occurred in many ways, since the small maniples could outflank the phalanx. At Heraclea we are told that the legion could not operate effectively because the battlefield was too congested and did not give the Romans the room to manoeuvre, forcing a frontal attack on the phalanx, and hence defeat for the legion. At Cynoscephalae *triarii* detached themselves from their parent units to attack the rear of part of Philip's phalanx. Most effective, however, was the ability of the manipular system to make a fighting retreat across the battlefield and we see this most clearly at Pydna. This factor is the single most important reason for the eventual defeat of

phalanx by the legion.

As we have seen, the phalanx was most effective in defence. The legion could, however, engage the phalanx frontally and then slowly retreat. Inevitably some elements, if not most, of the phalanx would follow up local victories - we can only assume this is what would have happened when phalanx defeated phalanx, the difference being that the legion was less susceptible to disorder and hence kept its fighting efficiency. The Romans could retreat some considerable distance without flight, keeping, one presumes, out of reach of the enemy's weapons. Eventually parts of the phalanx would become disordered and at this point the superb local leadership of the Roman army would come into play. Centurions would lead small groups of soldiers into any gaps that appeared in the phalanx's line. In time this infiltration would cause the phalanx's integrity to fall apart. Once this had occurred then the Romans, being expert swordsmen, were ideally equipped to prevail in the ensuing close man-to-man fighting.

The manipular system enabled the Romans to bring the battle onto their level, one of individual combat rather then massed fighting. The hoplite phalanx had never been able to do this because its tactics involved a rapid, vigorous, massed advance to push the enemy off of the field, a tactic which was easily countered by the tactics and defensive capabilities of the *sarisa* phalanx.

It was the case that in time the *sarisa* phalanx met an opponent that could take full advantages of the fundamental weaknesses of the phalanx. These

weaknesses had, however, been offset for some one hundred and fifty years by the advantages of the phalanx. It is noteworthy that the merits of phalanx warfare were retained until Magnesia by the Hellenistic monarchies, after which they slowly converted to the manipular system.

## Chapter II - The Peltast

### A) Introduction

The peltast was a specialist infantryman who performed those tasks unsuited to the phalanx. In the Classical period he had been a light infantryman who fought from a distance with javelins. This style of fighting continued to be the province of peltasts in the Hellenistic period, but they may have taken on an additional role. The tacticians record that the peltast was an intermediate form of infantryman, halfway between the hoplite and the *psilos* (1). The former was a heavy infantryman specialising in hand-to-hand combat; the latter appears to have taken on the role of the Classical peltast, adding sling and bow to his repertoire of missile weapons. This chapter will examine the evidence for such a new type of infantryman, a specialist who could perform both the functions of heavy and light troops.

### B) The Peltast in the Classical Period

Peltasts first appear as an important part of Greek armies in the Peloponnesian War (2). Modern scholars define these soldiers as light infantry. The Oxford Classical Dictionary, for example says, "Peltasts (πελταστής) were Greek soldiers named for their small shield (πέλτη). Originally they had no body-armour and their chief weapons were light throwing spears (ἀκόντιον). They are first recorded as derived from Thrace,

and were imported into Greece in the later fifth century B.C. to act as skirmishers. Their style of equipment was adopted by Greek armies, and achieved numerous successes, especially under Iphicrates (q.v.) and Chabrias. To Iphicrates are attributed changes whereby the length of their spears was increased by a half, and the size of their swords almost doubled. The object of these alterations was to enable the peltast to act as regular troops and not mere skirmishers. After the rise of the Macedonian armies they apparently fell into disuse." (3). As we shall see, this concise definition is open to criticism.

The motives for the introduction of peltasts into Greek warfare have been well documented by scholars. There were good strategic and tactical reasons which originated with the Peloponnesian War. This war was a very new experience for the military systems of the Greek city states. Campaigns were of long duration and often armies had to fight a long way from home, which placed great stress on the military manpower of the city state. A solution was the hiring of mercenaries, who were almost exclusively peltasts. The strategies of the combatants and the large theatre of the conflict led hoplite armies into broken terrain, in which they were ill equipped to operate. Light troops of some sort were needed, and again mercenary peltasts were the solution. As time went on the *thetes* of the city states copied the mercenaries and indigenous units of peltasts were created (4).

It is generally accepted that peltast fighting techniques originated in Thrace and were carried into the Greek world by Thracian mercenaries. This

is incorrect because early peltasts fought as light armed skirmishers and such troops - being the most primitive of troop types - are found in all warring societies. The Greeks had large numbers of light armed infantry even before the Peloponnesian War, for example at the battle of Plataea. Ancient writers also used words other than peltast to describe such troops, for example *gymnetes, psiloi* or *euzonoi*. Classical armies therefore used troops similar to peltasts long before the later fourth century. This being the case, a precise definition of the Classical peltast is needed before we proceed to examine the peltast of the Hellenistic period (5).

The word peltast originates from the Greek word for a small shield, *pelte*. Were Classical peltasts simply *psiloi* who carried shields? If this were the case then the peltast would be a specialist troop-type, a new addition to the armoury of a Greek general. This conclusion is, however, difficult to support as evidence exists for the equipping of *ad hoc* forces of *psiloi* with shields. For example, the Athenian *navarch* Thrasyllus equipped 5,000 of his sailors and rowers as peltasts, and presumably he gave them shields. Another example comes from the fighting in the Peiraeus between forces of the Thirty and democrat militia. Democrat *psiloi* were equipped with improvised shields much as Thrasyllus' sailors were. This incident is of special interest because troops called peltasts appear in the text alongside the improvised *psiloi* and they are tactically indistinguishable from each other. This evidence proves that the use of a shield was not the mark of the peltast (6).

Classical peltasts cannot be differentiated by their offensive weapon, the

javelin. It is clear, however, that they and many types of *psiloi* also used this weapon. It was an easily available weapon, simple to manufacture and common to many parts of the ancient Greek world (7).

Another possible solution is that 'peltast' was a pseudonym for 'mercenary'; ancient writers may have added peltast to more common words for mercenaries as a colloquial or technical term. On many of the occasions that we encounter 'peltast' in the sources they refer to hired soldiers. Furthermore the term 'peltast' might have referred to a professional soldier rather than a man forced to fight light-armed as a result of poverty. This may have started with the influx of large numbers of Thracians during the Peloponnesian War and spread with the creation of 'professional' corps of native Greek light infantry (8).

The ancients clearly differentiated between peltasts and other soldiers. For our purposes, however, the equipment and tactics of peltasts and other 'light' troops were no different from one another; both were javelin armed light infantry. The only possible distinguishing factor may have been that peltasts were 'professionals'. In the Classical period peltasts were the equivalent of troops who will be called *psiloi* in our survey of Hellenistic light troops. In the fifth and early fourth centuries B.C. the tacticians' intermediate infantryman did not exist. There were only two broad categories of infantry, hoplites and light troops - the latter being called by various different titles.

The mid-fourth century was a period of military innovation and two

sources record a reform of peltasts by the famous mercenary leader, Iphicrates, which may mark the introduction of an intermediate type of infantryman into Greek warfare. These are worth quoting in full, firstly Diodorus,

"For instance, the Greeks were using shields which were large and consequently difficult to handle; these he [Iphicrates] discarded and made small oval ones of moderate size, thus successfully achieving both objects: to furnish the body with adequate cover and to enable the user of the small shield, on account of its lightness, to be completely free in his movements. After the trial of the new shield its easy manipulation secured its adoption, and the infantry who had been called hoplites because of their heavy shield , then had their name changed to peltasts from the light *pelte* they carried. As regards spear and sword, he made changes in the contrary direction; namely, he increased the length of the spears by half, and made the swords twice as long. The actual use of these arms confirmed the initial test and from the success of the experiment won great fame for the inventive genius of the general [Iphicrates]. He made soldiers' boots that were easy to untie and they continue to this day to be called Iphicratid after him." (9). Secondly Cornelius Nepos,

"For example, he [Iphicrates] changed the arms of the infantry. While before he became commander they used very large shields, short spears and had little swords, he on the contrary exchanged shield for the round *pelta* - for which reason the infantry have been since called peltasts - in order that

the soldiers might move about and charge more easily when less burdened. He doubled the length of the spear and increased that of the swords; he changed the character of their breastplates, giving them linen ones. In that way he made the soldiers more active; diminishing their load and still contriving to protect their bodies.'' (10).

Modern interpretation of these two references has been varied and suffers from a lack of evidence for use of the Iphicratean peltast in battle, there only being one dubious reference to aid scholars in this regard (11). Both authors agree that this reform, assuming for the moment that it ever took place, was of hoplite equipment. They stress the change in type of shield used and show that the success of a lighter shield led to widespread adoption of the *pelte* by Greek soldiers. Weapons were lengthened, perhaps to compensate for the reduction in protection by keeping an enemy at a distance. Nepos records that linen armour was issued, omitting to clarify whether this was exchanging a heavy means of protection for a lighter one or the adoption of armour by troops who previously had none. Diodorus alone records the invention of the special boots. Reconstructions of the Iphicratean peltast have been made and fit closely what might have been an intermediate form of infantryman (12).

Some modern scholars have argued that the Iphicratean peltast was the forerunner of the *sarisa* phalanx (13). The reduction of shield size and the lengthening of spear is seen as evidence of an embryonic *sarisa* phalanx in the later Classical period. This theory can be rejected as equipment reform has been confused with tactical innovation. It is clear that the reform was

intended to make the hoplite faster and more flexible. Such a reform would create a tactical system totally the opposite of the ponderous, close formation *sarisa* phalanx that was to be invented by Philip II in 359 B.C.

Others have linked the Iphicratean reform to arguments for a reduction in hoplite armour in the later Classical period (14). Parke wrote,

"If we recognise that the Iphicratean peltast was no skirmisher, it is easier to understand why Diodorus can write as if a new form of peltast has been evolved." (15) In other words a lighter type of hoplite had been invented. The evidence that supports the argument for the light hoplite has, however, been discussed and rejected above (p.7); nor does the Iphicratean reform add any more weight to the light hoplite argument. The Iphicratean peltast did not carry a shield large enough to stand in a regular hoplite phalanx and could not conduct a successful *othismos*. The light hoplite theory affects infantry equipment not the basic tactics of hoplite warfare and, as such, the new peltast would be useless in the close-quarter role expected of the phalanx fighter in this period. The Iphicratean peltast could not, therefore, have been a special form of hoplite.

Thirdly, it has been argued that the reform was an attempt at standardisation made necessary by the return of large numbers of soldiers from Agesilaus' Asian campaigns (16). Large numbers of peltasts in Greece, being barbarians at this period, needed to be integrated into proper units, with a standard organisation and equipment. It is difficult, however, to rationalise an amalgamation of peltasts and hoplites within the same units

without a radical change in battlefield tactics.

A modification of this theory was proposed by Best (17). He argued that the 'Iphicratean' equipment had been used by Thracian infantry for a long time and that Diodorus and Nepos describe Greek soldiers taking up a traditional Thracian style. The shield, spear, and special boots are all, therefore of Thracian origin and even the adoption of the larger sword has Thracian connections as these people sometimes used the *machaira* or *rhomphaia*. Best's argument is, however, flawed as he works from the precept that these new soldiers were formed from *psiloi*; whereas the sources are emphatic that hoplites were the troops who were reformed. Furthermore, as we have seen, there is little to distingush peltast, Thracian or Greek, from *psiloi* in the Classical period. More fundamentally, however. from the standpoint of this discussion, Best's argument discusses equipment reform rather than any tactical innovation that might have resulted from the reform.

Anderson argues that Iphicrates invented this new style of peltast for an overseas mercenary assignment. At approximately the date of the reform, though we cannot be certain of it, the Egyptian satrapy of the Persian empire rebelled. Persia had light troops in plenty and so Iphicrates re-equipped his peltasts as hoplites to fulfill a Persian employer's need for heavy infantry. Diodorus, however, emphasised the lightening of equipment - especially where the shield was involved - rather than creating a heavier type of soldier, which obviously overturns Anderson's theory (18).

Academics do not agree on the matter of a possible date for the reform.

As we have seen, some scholars believe that the Iphicratean peltast had always existed. Others have proposed a date of 393/2 B.C., during the Corinthian War, on the assumption that Diodorus quoted the reform to enhance the reputation of Iphicrates and the logic of introducing new equipment during a lull in major hostilities. Diodorus dated the reform to 374/3 B.C. and many scholars support him, arguing that some time would have been needed for the operational advantages of the new peltast to become clear and gain widespread acceptance (19).

Possible references to the new peltast in the field are few - the reform of the Phocian peltast corps, the battle of Leuctra, and an encounter between Agesilaus and Chabrias in 378 B.C. None are precise enough in terminology or narrative description to enlighten our discussion and they fail to supply modern scholars with irrefutable evidence for actual use of the new troop type (20). This has prompted the conclusion that the Iphicratean peltast is merely an aberration, a theoretical soldier that never took the field. It is noteworthy that Xenophon - a noted military authority - saw no need to describe this important tactical reform, which would have occurred during his military career. Some modern commentators have excused Xenophon's oversight, arguing that peltasts were not within his area of experience, i.e. in common use by the Spartans (21). Despite this it is clear from our sources that Xenophon respected Iphicrates as a major contemporary military figure and would have noted any major advances this general might have originated (22). It is not, however, within the scope of this work to say categorically

that the Iphicratean peltast existed and was the forerunner of an intermediate Hellenistic infantry type. It is sufficient for our purposes to realise the possibility of such a development in the Classical period.

A second possible source for an intermediate Hellenistic troop type are Spartan hoplites of the later Classical period. Hoplites were vulnerable to peltasts/*psiloi* when unsupported in rough terrain as they could neither charge to push the light troops away, nor reply with missiles of their own. In such situations, therefore, the tactical options available to hoplites were limited. For the most part the hoplites had to stand on the defence looking to their heavy armour for protection, on occasion - for example in the case of Demosthenes' force in Aetolia in 427/6 B.C. - short controlled charges were used to keep the enemy out of effective missile range (23). To be fully protected, hoplites had to be supported by other arms, cavalry or *psiloi*, but even so most hoplite armies could only keep light troops at a distance, reducing their effectiveness but not destroying the enemy. Initially Spartan armies were equally ineffective at countering skirmishers - as the debacle on Sphacteria in 425 B.C. illustrates (24). But by the time of Agesilaus' campaigns the Spartan army had devised new tactics. These are best illustrated by quoting Xenophon,

"While he was making the sacrifice, the Acarnanians kept up a continuous pressure. Hurling stones and javelins, they came in close and inflicted a number of wounds. Then Agesilaus gave the order; the men from age groups 20 to 35 ran forward from the hoplites, the cavalry charged and

Agesilaus followed them with the rest of the army.'' (25). On this occasion the 'sally forth' from the phalanx was accompanied by cavalry; on other occasions the young Spartan hoplites charged alone. This special tactic was probably used by the Spartans alone, as only they had the requisite skills, fitness and tactical organisation to both charge out of the phalanx at the precise moment and fall back to reform in its ranks (26).

This tactic was very successful. At times it failed, but, for the most part, the Spartans had found an answer to light troops. so much so that Spartan troops came to ridicule peltasts and those hoplites who feared them. For our study the implications of this tactic go further: this Spartan tactic shows hoplites acting like light infantry; they are, in effect, an intermediate troop type capable of operating in phalanx or loose order.

For the most part, therefore, the Classical peltast was no different from the *psiloi* of the period. By the later part of the period Spartan hoplites had devised techniques that made them intermediate troops. Perhaps the reform of Iphicrates took the Spartan anti-skirmisher tactic another step by creating an intermediate-troop type that would be the forerunner of those used in the Hellenistic period. Iphicrates' new type of infantryman, if equally trained, would be more than a match for a Spartan hoplite who had charged from his phalanx. The Iphicratean peltast would have a light shield and a long sword, better suited to man to man fighting than hoplite equipment, and, in addition, some authors have argued that this soldier would have carried javelins, giving him a long range capacity. Finally the long spear would have allowed

this soldier to fight in a phalanx though an inferior one. The Iphicratean peltast would have, therefore, neutralised the Spartan anti-peltast tactics.

By the end of the Classical period evidence exists making the existence of small numbers of mercenary soldiers trained in a new style of warfare possible. Their absence from battle accounts may be due to their small numbers - well-trained troops were expensive and rare in Classical Greece. The concept of this specialist infantryman originated with the Spartans and was perhaps taken a step further by Iphicrates as a result of his long military career and in an attempt to counter the Spartans. This new type of peltast may have been the forerunner of the intermediate Hellenistic type described by the tacticians.

C) Written Evidence for the Hellenistic Peltast

The tactical writers are the only sources which record that the peltast was an intermediate type of soldier in the Hellenistic period, and they must be the starting point of our study. This soldier would have presumably been much like that described in the final part of the last section, part hoplite, part *psilos* (27).

The first task is to attempt to see if such a soldier appears in the historical record. Alexander the Great's corps of guard infantry, the *hypaspists*, is an immediate candidate for the intermediate infantry type (28). Some scholars argue that the *hypaspists* were an *élite* unit of the *sarisa* phalanx, but such troops carried a shield akin to the *pelte*, which causes confusion in the sources and makes categorical identifications of troop types

difficult. Seleucus I, for example, was handed a *pelte* by a soldier upon dismounting from an elephant: did he receive it from a peltast or a *sarisaphoros* (29)? A strong body of opinion holds that the *hypaspists* were peltasts and some writers actually refer to the *hypaspist* as an intermediate type of infantryman, linked with the peltast reform of Iphicrates. For the most part this school of thought has used tactical arguments to support its theory, notably occasions when the *hypaspists* were used on special missions, scouting or raiding ahead of Alexander's main army, and when they acted as a 'hinge' between phalanx and cavalry in set- piece battles (30).

This second opinion needs examination. Firstly, much of the evidence used to support a 'lighter' *hypaspist* is spurious. It is the case that hypaspists were used on special missions, but so were regular *taxeis* of the phalanx. The argument for the tactical 'hinge' is also very difficult to substantiate. Alexander's cavalry was always held back until the crisis of the battle, but once launched it soon outstripped the infantry centre. There is no evidence to support a special role for the *hypaspists* in pitched battles other than as an *élite* unit of the phalanx and firmly part of the infantry centre. The concept of the tactical 'hinge' is a modern concept and does not fit into Alexander's operations, where cavalry were held back as a reserve and launched through the enemy's left centre - for the most part - after large numbers of their army had been pinned frontally by the phalanx and were unable to react to neutralise the Macedonian cavalry threat.

It has been argued that the Greek mercenaries who served in Alexander's

army - as opposed to the soldiers supplied by the Hellenic League - were peltasts (31). This interpretation rests on the assumption that peltasts of this period were of the Iphicratean type. At this early date, however, peltasts may have been light, skirmishing infantry, as they had been throughout most of the Classical period.

The only occasion that Greek soldiers fought in the line of battle is Alexander's campaigns was at Issus in 333 B.C. (32). Just before the two armies met there was a crisis on the Macedonian right: the Macedonian front line had to be extended and Greeks were moved up from the reserve to fill the resulting gap. These men fought on the right of the *hypaspists,* but unfortunately the source is not specific as to the type of troops these men were. They were asked to fight in the front line and the Macedonians were attempting to cross the River Pinarus, broken terrain unsuited to close-order foot. Further the Persians used *cardaces* to defend the river bank, troops who were probably themselves peltasts and certainly not close-orderfoot (33). Due to the tactical situation, these Greeks were probably not hoplites. Either they were light troops brought up to cover the flank of the advancing Macedonian phalanx, or they were intermediate troops. Parke went further and argued that Greek peltasts were also brought up to add weight to the rear ranks of the phalanx, but there is no evidence to support this view.

In Alexander's wars there is only circumstantial evidence to support the use of intermediate troops. Despite the efforts of scholars, the majority of peltasts used in this early part of the Hellenistic period were probably light

infantry, like their Classical counterparts. What then of the evidence for the wars of Alexander's successors?

Many accounts of Diodochi battles have survived, but the existence of the intermediate peltast is, once again, open to doubt. In 317/6 B.C. Antigonus devised a bold attack to strike at the very heart of Eumenes' lands. He chose to march through the territory of the Cosseans whose country was broken and suitable for ambush. Antigonus selected the best peltasts from his army, formed them into two divisions, and it was planned that they would form the van of the main army to secure the route. The sources do not expand on the tactics used by the peltasts to accomplish their mission, but later in the period peltasts in similar situations used tactics that are best described as those of intermediate infantry (34).

At Paraitakene Eumenes deployed 3,000 *hypaspists* and *argyraspdes*, both of which are subject to the *hypaspist* controversy discussed above and, as a result, might be regarded as peltasts. It is clear, however, from their position in the centre of Eumenes' line and the devastating effect of their charge, that they are heavy infantry, probably *sarisa*-armed (35). Once again, as with Alexander's *hypaspists*, they cannot be intermediate peltasts.

Peltasts are next encountered at Antiochus I's battle against the Galatians, the so-called 'Elephant Victory', of which the date and even the historical fact is open to question. The Seleucid army at this battle consisted mainly of peltasts and *psiloi*, together with sixteen elephants and a small number of cavalry. Lucian's account of the battle highlights the role of the

elephants at the expense of the other troops, but he does record that the peltasts were the heaviest infantry available to Antiochus, there being too little time for a full muster of the Seleucid army to take place. The obvious implication is that these peltasts were more heavily equipped than *psiloi*, or that they had a tactical role more akin to line infantry (36).

We next come to those sources that cover the later third century and beyond. Due to the breadth of the evidence, cases will be dealt with on a regional rather than a strictly chronological basis.

Firstly, Macedon under the Antigonid dynasty. The first campaign for which records have survived in detail is that culminating at Sellasia, 222 B.C. Antigonus Doson had 3,000 peltasts in his army at the start of this campaign, and the reference is important because Polybios typically uses the word *euzonoi* for light infantry in his account of this campaign (37). These peltasts may have fought at Sellasia under the guise of *chalkaspides*, a unit of whom was deployed on the right of the Macedonian/Allied line. These troops have been discussed above (p.69), where it was concluded they were indeed peltasts, rather than phalanx troops (38). Suffice it to say here that these *chalkaspides* form part of the argument that has surrounded Alexander's *hypaspists* and various units of the Hellenistic period whose title was derived from the colour of their shields. The conclusion reached above that these *chalkaspides* were peltasts was based on the nature of the terrain on the Macedonian/Allied right at Sellasia, the other units with whom the *chalkaspides* were brigaded and the tactics they used.

This unit are good candidates for the intermediate infantry type. The evidence from Sellasia suggests a tactical role for the *chalkaspides* quite unlike that given to *psiloi* or phalanx. The *chalkaspides* were deployed in association with Illyrians, troops closer to peltasts than heavy infantry. This mixed force, either in alternate units alongside one another or in alternate lines one behind the other, advanced up a broken hill and engaged a Spartan phalanx of considerable size. They were supported by *psiloi* and, ultimately, hoplites (39). Polybios' account of the fighting on Euas is confusing, but it appears that the Illyrians and *chalkaspides* launched some kind of combined assault that eventually dislodged and broke the Spartans in rout. Polybios adds that it would have been better for the Spartans if they had launched a limited assault, driven the enemy off the hill and then resumed their positon on the crest (see above pp.73ff).

With regard to this discussion two points need attention. Firstly, that as the Macedonians advanced they were vulnerable to attack; "they could have easily have been put to flight", says Polybios (40). Secondly, that once Eucleides had made his mistake in not attacking, his *sarisa* phalanx was actually at a disadvantage against what were 'lighter' troops. To summarise, the *chalkaspides* and Illyrians were peltasts; hence Polybios' assertion that they could have been forced back by the phalanx with ease, but once the battle had become static the phalanx had no answer to these troops. Polybios also records that the Spartans were at a disadvantage because of their enemy's special formation. Polybios' account of the fighting on Euas is

unclear as to details, but it is possible that some kind of tactical innovation was used by the Macedonian/Allied force that was related to their equipment and formation, a tactical innovation to which the phalanx had only one answer, rapid attack, and to which static defence was no answer.

The battle on Euas might be reconstructed as follows. The combined Macedonian/Allied force advanced up Euas in a chequerboard formation of small units - *speirai* - to reduce the effects of disorder, the two contingents being either intermixed or one behind the other. During the advance the men within each unit would have been dispersed and operating like *psiloi.* If the Spartan phalanx had interfered with this advance with short controlled charges then the Illyrians and *chalkaspides* would have been swept back to their start point, or even beyond. As it was the Spartan *psiloi* hindered the advance by a flanking move, but this was beaten off by Philopoemen's timely cavalry charge. It is also worth noting that had the Spartan phalanx attacked it would have eventually encountered the Achaean hoplites stationed in reserve of the Ilyyrian/*chalkaspid* assault troops, and that the Spartans would have had to advance through a hail of missiles from the second support line, composed of *psiloi.*

Polybios' account does not detail events once the Illyrians and *chalkaspides* reached the summit of Euas and engaged the Spartan phalanx. We can conjecture that the Illyrians and *chalkaspides* formed a regular battle order and perhaps an *othismos* took place. Alternately fighting would have been on a man-to-man basis, with missiles being shot into the stationary

ranks of the phalanx or localised attacks mounted by small units of men. Either way, the phalanx became so disconcerted that it began to retreat; this caused its formation to become disrupted and its defensive integrity to fall apart. Perhaps at this point small units of peltasts began to infiltrate the phalanx as gaps appeared in the otherwise serried line of *sarisai.* Eventually this loss of cohesion was disastrous for the phalanx and resulted in retreat turning into rout.

The fighting on Euas may be the first reference to intermediate troops in action in the period. It has all the ingredients of a success by such a troop-type. A special formation was used, perhaps a chain of small units designed to maintain a missile barrage by dispersed peltasts supported by comrades standing in formed ranks. The peltasts operated on ground unsuited to a phalanx and they managed to stand in close combat with a phalanx until the enemy broke. The fighting on Euas cannot refer to a simple push of pike like most Hellenistic battles. The terrain is too broken and the Macedonian/ Allied troops too light - even if one were to accept that part of the force, the *chalkaspides,* were phalanx. Nor is it a battle between phalanx and *psiloi;* for the mixed forced advanced with too much resolution for such a reconstruction - for example, it was inconvenienced, but not thwarted, by the Spartan *psiloi* attack. Finally, the mixed force actually defeated the Spartans, a feat that *psiloi* could not accomplish in the Hellenistic period in a set-piece battle. Despite the problems of Polybios' account, therefore, Sellasia is the first instance in the Hellenistic period where intermediate peltasts can

plausibly be argued to have been used in battle.

Another reference from Polybios shows that the peltasts at Sellasia could potentially have formed a proper battle formation. He records peltasts crossing a river and deploying into *sunaspismos*, a characteristic phalanx formation, in the face of Aetolian cavalry (41). The equipment of these peltasts and their formation was obviously enough to deter a cavalry charge since the Aetolians did not advance to close quarters.

Peltasts continued to be a feature of the Antigonid army, either as an *élite* guard formation (42) or as line troops. In 219 B.C. Philip V deployed an army that included 10,000 phalangites and 5,000 peltasts (43). In 218 B.C. Philip V broke camp and marched out of Larissa with 3,000 *chalkaspides*, perhaps the guard, 2,000 peltasts, 200 Cretans - *psiloi* archers - and 200 cavalry; as balanced a fighting force as one could expect for the period (44).

Philip V often used peltasts and *psiloi* in conjunction in his military operations. An example is his use of such a mixed force, though Polybios actually uses the word *euzonoi* instead of *psiloi*, to screen his passage of defiles at Thalamae and on the march to Thermum (45). Both troop types could also form rear guards in difficult terrain, even setting ambushes from cover for unsuspecting pursuers (46). It is noteworthy in the retreat from Thermum that *euzonoi/psiloi* were detached to screen the rear of the Macedonian column whilst peltasts took up an ambush position. Clearly Philip placed more reliance on his peltasts to succeed in a situation that might require hand-to-hand fighting. This episode also demonstrates that both

*euzonoi/psiloi* and peltasts could assume screening roles, suggesting that both were missile armed.

Similar mixed forces could be detached to raid, for example in the Peloponnese, and Attica (47). Peltasts could also form special advance forces to delay enemy attacks, as at the Aoos pass where they supported cavalry, again hiding in ambush (48). They were also noted for what we would today call commando missions. For example 1,000 peltasts and 500 Agrianian javelinmen (*psiloi*) were sent forward to attempt to take Chalchis by *coup de main* (49). Peltasts and *euzonoi/psiloi* were also used in conjunction around the city of Lissus (50).

The activities of Philip V's peltasts in strategic operations are many and varied. Peltasts and combinations of peltasts with other types of soldier were obviously very effective, though on occasion they failed. For example Philip V used peltasts as part of his army in his Laconian campaign. In the advance on Sparta he sent forward peltasts, mercenaries - probably *psiloi* - and Illyrians to storm a valuable hill which was situated on the other side of a river defended by Spartan troops. This was a dangerous mission, across difficult terrain, against an enemy who occupied a strong defensive position and who, according to Polybios, had better armaments. The initial Macedonian attack faltered and was repelled, and Philip was forced to recall his detached force to his main line of phalanx, which had by now deployed from march column. Obviously, in this episode, peltasts were not strong enough to defeat missile-armed *psiloi* in such a strong position. It might be

the case that the intermediate troop-type was equipped with javelins, but was either not as expert as dedicated *psiloi* or perhaps suffered from a shortage of ammunition (51).

The above are examples of the use of peltasts engaged in strategic operations, raiding, rear and advance guard missions. Due to the terrain prevalent in Greece, Philip V fought this type of warfare on a very large scale and several important points arise from the use of special forces in his campaigns. Firstly, peltasts were often used in concert with other troops, *psiloi* or cavalry. Peltasts may have been asked to form some kind of 'heavy' support for *psiloi*. Secondly, peltasts could be expected to assault difficult terrain, as the example from the Laconian campaign shows. Thirdly, peltasts could be expected to make rapid strategic movements, keeping up with *psiloi* or even cavalry, which suggests that they could move without the march discipline and impedimenta we associate with the heavy infantry of the period. In the strategic field the value of Philip's peltast corps is obvious; they gave him the strategic flexibility to wage war across a wide area and in varying circumstances, and they allowed him to construct fighting groups of several different troop-types tailored to his objectives. On occasion Philip's peltasts failed in their missions, but overall they were a resounding success.

Philip V also used peltasts in set-piece actions, such as Cynoscephalae, which was his largest land battle. At Cynoscephalae peltasts may have fought as part of the Macedonian advanced skirmish line and certainly held the extreme right of the Macedonian line once battle proper was joined (52).

There is also a small possibility that the peltasts marched from the Macedonian camp with their heavier brethren (53).

The sources only record the position of the peltasts in the battle; they give no detail of their role in the fighting. They may have taken part in the complex drill that formed the right wing of the Macedonian phalanx for battle, and if so they could vary their density and depth of formation just like 'heavy' troops (54). They may also have fought alongside the Macedonian *psiloi* who formed the skirmish line that contested the lower slopes of Cynoscephalae with their Roman counterparts. This dual-role, of skirmishers who later fell in to form the main line of battle, may point to an intermediate infantry force in action. The sources are, however, too vague to make anything more than a tentative conclusion.

Peltasts also formed part of the Macedonian army in the reign of the last Antigonid king, Perseus. Livy records that 5,000 peltasts - he uses the Latin *caetrati* - were present at the parade that marked the opening of the Pydna campaign (55). 2,000 of these were specially picked men, probably the guard. We hear little of them in the actions preceding the main battle at Pydna, when *psiloi* and cavalry performed most of the strategic tasks, but they did play a part at Pydna.

At Pydna the peltasts formed up separately from the phalanx: they were deployed to its right, in a simliar position to the one they had held at Cynoscephalae (56). Accounts of the battle record that the Macedonian phalanx was drawn up in two divisions, the *leukaspides* and the *chalkaspides*

(57). Some scholars have added the peltasts and the guard (*agema* [58]) to the main body of the phalanx on the assumption that they were *sarisa*-armed (59). At Sellasia we encountered *chalkaspides* serving in an Antigonid army and it was concluded that they were peltasts. The same conclusion cannot be drawn for the *chalkaspides* at Pydna.

It is clear from the sources that there were at least four units in the centre and on the right of the Macedonian army, two large units of phalanx (the *leukaspides* and *chalkaspides*), the infantry guard (*agema*) and 'line' peltasts. Livy's account posts the peltasts (*caetratri*) separate from the phalanx (60). Plutarch does the same with the infantry guard; they march out of camp before the *chalkaspides* and take their position in the line (61). Clearly the guard and the peltasts were not part of the main phalanx. We can also be sure that the guard were peltasts. Livy records that 3,000 of them were picked from the peltasts (62). Plutarch does not contradict this even when he describes the decorated panoply of this corps, and indeed we will meet later troops who used peltast tactics and wore heavy armour (63). We must note here that generally weight of equipment does not dictate tactics - a naked Gaul is as much a heavy infantryman as a Greek hoplite, if both fight shoulder-to-shoulder. At Pydna, therefore, the peltasts and the *agema* were intermediate troops, the *leucaspides* and *chalkaspides* phalanx. The *chalkaspides* were not *élite* troops, and certainly not the same as *chalkaspides* at Sellasia as their numbers and tactical role at Pydna do not match the earlier battle. In short the *chalkaspides* of Sellasia have become the *agema* at Pydna,

and for whatever reason a unit of line phalanx has acquired the title given to the guards in Polybios' account of Sellasia.

Given that the *agema* - who may have worn armour - and the peltasts are intermediate infantry, then Pydna is an example where this troop-type stood in the main line of battle. Unfortunately the sources do not record the battlefield role of these troops in detail. The terrain to the right of the Macedonian line was broken and Perseus may have intended his peltasts to operate there, but since the sources do not record the actions of these troops in detail, this is only conjecture. Plutarch does record that the *agema* fought to the last man, highlighting, perhaps, the ability of *élite* intermediate infantry to fight in hand-to-hand combat (64).

We turn now to the Ptolemaic army. Only two references are of interest and only one refers directly to peltasts, the other to the *agema*, which might be the equivalent of the Antigonid foot guard, i.e. trained to fight as peltasts. Both examples come from the Raphia campign, 217 B.C., where the peltasts numbered 2,000 men, the *agema* 3,000 (65).

The equipment of the *agema* is open to discussion and follows the general debate regarding Hellenistic guard units from Alexander's *hypaspists* onwards. In the Ptolemaic case, the *agema* were probably intermediate infantry rather than *sarisaphoroi*. It has been shown that *sarisaphoroi* were deployed in large blocks on the battlefield and that they needed mutual support to be effective. The phalanx needed closed flanks if it were not to be outflanked and disordered. At Raphia the *agema* was separated from the main

body of the Ptolemaic phalanx by 2,000 peltasts (66). It would be tactically unsound to deploy an *élite* phalanx of only 3,000 men in such an isolated and exposed position. Such a deployment would invite an enemy to strip flank supports from the phalanx, envelop it and destroy it. We must assume, therefore, that the men of the *agema* were equipped and fought as peltasts.

At Raphia the *agema* and peltasts were deployed on the left, between the Ptolemaic centre and the cavalry wing. The battle opened with a combined Seleucid cavalry and elephant attack on the cavalry of the Ptolemaic left, which fled after being outflanked. The Ptolemaic elephant screen, which had been deployed in a chain across the front of the *agema* and peltasts, was forced back onto its own infantry, and must have disrupted the infantry line. A combined force of Seleucid elephants and infantry - probably peltasts - then fell on the Ptolemaic infantry who were forced back and eventually broke in rout (67). The defeat of the Ptolemaic peltasts is easily explained: they were rapidly outflanked by the successful Seleucid cavalry attack, disordered by their own elephants and then faced infantry of equivalent weight combined with elephants. Ptolemy used his peltasts at Raphia to close the flanks of his infantry phalanx. They were deployed on the left, the side most often the subject of a major cavalry assault and covered by elephants, maybe as a protection against a frontal cavalry attack. What is important for the purposes of this study is that they do form part of the battle- line proper, although, of course, they are not expected to hold the centre against an enemy phalanx. These troops were not used in a skirmisher role as a screen

or flanking support-force. Once the action began, they did not fall back behind or to the side of the main line; rather they were expected hold their ground and battle it out at close-quarters if necessary. That they failed in this regard was not due to a failing in equipment or tactics; rather they were caught in a tactical situation from which few troops could expect to survive.

The Ptolemaic army therefore deployed peltasts which stood in the main line-of-battle on the flanks of their *sarisa* phalanx. What then of the other great eastern power, the Seleucid Empire? Firstly the Seleucid guard infantry, the *argyraspides*, needs some discussion. This 10,000 strong corps, like the *élite* units of Macedon and Egypt, is often discussed as part of the debate that has surrounded Alexander's *hypaspists*. Unlike the guard units of Antigonid Macedon and Ptolemaic Egypt, however, the Seleucid *argyraspides* were *sarisa*-armed phalangites and not an intermediate troop-type (68). This matter dealt with, we can go on to survey the evidence for Seleucid peltasts, all of which comes from the reign of Antiochus III.

At Raphia the Seleucid deployed a force of Greek mercenaries to the right of their phalanx. This force attacked the Ptolemaic left and may have been peltasts - see above for their effect on the Ptolemaic line (69). No details, however, are forthcoming from Polybios' account of the action; all that can be added to our study is that Seleucid peltasts on that occasion actually attacked the enemy line, suggesting they were equipped for hand-to-hand combat.

The Seleucid crossing of the Elburz range in 210 B.C. is more

informative (70). The Seleucid army was engaged in a campaign against the Parthian king Arsaces. The Elburz mountain chain blocked Antiochus' advance into Hyrcania and special troops were needed to clear a path for the main army. The intermediate peltast was ideally suited to such a mission.

Upon reaching the Elburz it became clear that the heavy troops and baggage could not be expected to cross in the face of resistance, so Antiochus detailed a special force to clear the way. This force was split into three divisions, the first consisting of *psiloi* (archers, slingers and javelinmen), the second of Cretan archers, the third of the *thureophoroi* and *thorakitai*. The phalanx was to bring up the rear. The role of the *psiloi* will be discussed later under the relevant section, but of interest here are the units of *thureophoroi* and *thorakitai*. *Thureophoroi* were named after the long oval shield they carried, the *thureos*, and troops of this kind can often be seen in Hellenistic art. *Thorakitai* are more difficult to identify: one possible representation has survived from Sidon and this soldier appears in Achaean armies (71). We will discuss him in more detail later, but suffice it here to say that he was an armoured peltast.

The Seleucid plan of action appears to have been as follows: the *psiloi* were to advance and deal with enemy skirmishers - one presumes that missiles were to be their main weapons; the *thureophoroi* and *thorakitai* were to follow and deal with any knots of organised resistance. We can presume that the latter were expected to fight hand-to-hand and as such they must have been suitably equipped. Reconstructions show these troops equipped

with *thureos*, helmet, sword and long spear, and some add a javelin; the *thorakitai* presumably wore armour.

Seleucid peltasts also fought at the battle of the Arius River, 208 B.C. (72). Polybios begins his account three days before the action. He records that the Seleucid army approached normally for the first two days. Then on the third, Antiochus took 10,000 peltasts, his *psiloi* and his cavalry, and marched through the night to the river Arius. The Bactrian army had fallen back to spend the night in a town some twenty stades distant and upon hearing this the Seleucids crossed the river. The main action began next day with a Bactrian attack on Antiochus' advance guard. It is clear from Polybios' account that Antiochus' men were not properly deployed when the Bactrians attacked and further that the main Seleucid army had not yet been brought up. Polybios records that the Seleucid advanced force deployed into σημείας and οὐλαμούς: The former was an infantry formation, the latter a cavalry formation. The Bactrians attacked, but were unable to break the Seleucid line. Eventually Antiochus took 2,000 of his mounted bodyguard and counter-attacked, carrying the field.

Several points can be drawn from this encounter, despite no reference being made to peltasts in the actual battle. It is probable that the troops in *semeiai* were peltasts - the 10,000 mentioned in the approach to the river - for it would have been foolish to deploy *psiloi* to repel cavalry and the phalanx had not yet arrived. Bar-Kochva argues that these 10,000 peltasts were infact the *argyraspid* guard (73). His argument rests on numbers - the

*argyraspides* were indeed 10,000 strong - and the general confusion in the ancient sources over the *pelte*, an item of equipment used by both phalanx and peltasts. But Bar-Kochva clearly believed that the *argyraspides* were *sarisa*-armed phalangites, and as a result his analysis can be rejected. Phalanx troops were not the ideal troops to be sent forward as an advance guard to cross a river in the face of the enemy. We should take Polybios at face value, and accept that the 10,000 peltasts were just that, troops ideally suited to special operations. This being the case, this was the largest force of peltasts deployed in the period.

The Battle at the River Arius demonstrates the use of small units of peltasts and cavalry hurriedly deployed together to repel cavalry. The formation worked well. We can presume that the weight of the defence fell on the peltasts, perhaps formed in *sunaspismos* - a formation in which we have previously encountered them. Perhaps the Seleucid cavalry made limited counter-attacks to break the impetus of the Bactrians. After the enemy horse had exhausted themselves, Antiochus launched a devastating counter-attack with his guard, sweeping all before him. It might be well to note that the peltasts would have needed an anti-cavalry weapon, a long thrusting spear, to be successful in their role. Again peltasts are encountered in the line of battle, performing an essentially hand-to-hand mission.

Seleucid peltasts were also present at the battle of Thermopylae, 191 B.C. (74). Bar-Kochva again identifies these troops as *argyraspides*, but the Seleucid army at Thermopylae was largely destroyed and yet we find the

*argyraspides* a year later at Magnesia. It is highly improbable that a guard unit could have been reconstituted in so short a time. Also these peltasts fought, according to Appian, in advance of the main Seleucid phalanx, hardly a position suitable for guard *sarisaphoroi.* Again Bar-Kochva must be rejected and it will be assumed that these troops were peltasts proper.

Appian records that peltasts and *psiloi* were deployed in front of the main body of the phalanx (75). Livy's account does not mention peltasts; he has only *levis armaturae* (Greek : *psiloi*) in this position (76). These soldiers formed a screen for the phalanx, which, according to Appian, retreated when the Roman attack began in earnest. Appian makes no mention of peltasts in his description of this maneouvre, but it is reasonable to assume that they accompanied the *psiloi* and fell back through the phalanx.

At the Arius river the peltasts fought as 'heavy' infantry. Thermopylae saw them in their role as light troops. It must be assumed that they were equipped with missile weapons to shoot at the Roman line. Perhaps Antiochus also wanted to stiffen his skirmishers with soldiers equipped for close combat, the intention being to ward off an attack by Roman *velites* - who were better equipped for close action than most Hellenistic *psiloi* - and forestall a debilitating *mêlée* such as we have encountered at Cynoscephalae.

Seleucid peltasts are last recorded in action at Magnesia in 189 B.C. Livy records that 4,000 Pisidian, Pamphylian and Lycian *caetratri* (Latin for peltasts) were deployed on the Seleucid left, between the phalanx and the cavalry (77). Appian's account is at odds with Livy since he places *psiloi* in

the same position (78). This conflict of sources does not concern us since the role of the peltasts in the Seleucid battle plan is not recorded by either Appian or Livy. They may, therefore, have fought as part of the general Seleucid light screen - hence the confusion in nomenclature (79).

So much for the large armies of the period. Peltasts can also be found in the ranks of certain Greek minor powers. The concentration of power into huge monarchic states in the immediate post-Alexandrian period did nothing to change the fragmented political structure that had characterised Greece from the earliest times. The traditional *polis* system was supplemented by a series of multi-state leagues, all of which maintained military forces of varying size. The intermediate peltast can be found in many of these armies, which is not surprising when one considers the terrain and nature of war in Greece. Such a soldier was ideally suited to the fighting that went on in the region throughout the Hellenistic period.

The mountains to the north of the Gulf of Corinth were united in this period into what modern historians call the Aetolian League. Epigraphic evidence exists to show that peltasts were used by the army of this state. It is interesting to note that the inscription from which this evidence is drawn, uses a three-tier categorisation of infantry much like the tacticians. Unfortunately despite the many raids and wars fought by the Aetolian army no direct reference is made to peltasts in action (80).

More substantial evidence survives for the use of peltasts by the army of the Achaean League. Plutarch, Pausanias and Polyaenus record a reform of

Achaean infantry in which peltasts appear to have been converted into *sarisa* phalanx (81). Of special interest is their references to the equipment used by Achaean troops prior to the reform. Plutarch records that the Achaeans used *dorata* and *thureoi*, Pausanias short *dorata* and long oval *hopla* - like the Celtic *thureos* or the Persian *gerrha*. Polyaenus follows Plutarch's line, adding that the Achaeans had been hoplites before the reform. Plutarch's account also gives some insight into the tactics used by pre-reform Achaean infantry. Unfortunately, however, he appears to contradict himself. He records that the Achaeans were lightly armed and fought well at a distance, implying they used javelins, in addition to spears, yet they formed a solid phalanx without division into *speirai*. Further he says that their line was weak and easily broken because they had neither interlocking shields nor *sarisai*. Plutarch's account may be reconciled by assuming he refers to intermediate infantry, composed of militia drawn from an area we know to have been backward and poor in resources (82). These troops were good at long range combat, reflecting the traditional *psiloi* skills of the Greek urban poor and hill dwellers (both types existed within the boundaries of the Achaean League). *Psiloi* were, however, of limited use, and the League needed some kind of heavy infantry base for its army. Hoplites were out of the question, because the League was too poor to supply them in large numbers. The League therefore turned to the peltast as a poor substitute. The peltasts we have encountered so far have largely been small bodies of well trained professionals, in many cases mercenaries. The Achaean League deployed a peltast force composed of militia whose battlefield efficiency was question-

able and who could do little more than stand in the battlefield in a large unwieldy mass. Eventually Philopoemen re-equipped these troops with *sarisai* converting them into a highly effective phalanx.

Achaean peltasts were used in action at the battle of Caphyae (83). An all-arms Achaean force was in pursuit of Aetolian raiders. The Achaeans caught up with the Aetolians in the region of Caphyae. Polybios' narrative of the battle and his analysis of the tactics used is excellent. The Aetolians rushed for the safety of a nearby range of hills as soon as they were aware of the presence of a force of Achaeans in close pursuit. Once he encountered the Aetolian raiders, Aratus, the Achaean commander, sent forward his cavalry and *psiloi* to engage the enemy rear- guard, which was composed of cavalry. When the Aetolian rear guard retreated to the main Aetolian force, by now in a line of hills, Aratus advanced a force of *thorakitai* to reinforce his front line (84).

The *thorakitai* advanced at the double and the Aetolian reaction was to counter-attack with their cavalry. Polybios says that they struck lead-units of the Achaean force, the implication being that either the Achaeans were in a column - which is unlikely - or echeloned - which is more acceptable. Regardless of their formation the Achaean force was rolled up, their cavalry being struck first and fleeing in panic. The Aetolians then followed up their victory, riding down the *thorakitai,* who had been disordered by their rapid retreat and also took to flight.

Several important observations can be made on the role of the *thorakitai*

at Caphyae. They were initially held back. Aratus first deployed an advance force of *psiloi* and cavalry whose mission was to attack and pin the rear of the retreating Aetolian army, loaded down, no doubt, with loot. The *thorakitai* were only placed in the line when the Aetolians withdrew and reformed their cavalry. The tenor of the combat had changed, the Aetolians had given up skirmishing to protect their rear - note that no record is made of their cavalry engaging in close combat until the charge - and the time had come for either a full scale Achaean attack or a solid defence. Aratus may also have felt that his *thorakitai* would provide a solid base off which his other combat arms could operate and perhaps become a ready, advanced strike force to engage in hand-to-hand combat should the opportunity arise. It is also noteworthy that the *thorakitai* were able to advance at the double to catch up with their advance force and, one presumes, keep up with that force as the action proceeded; their armour did not reduce their mobility. Aratus also had a phalanx to hand but chose to hold that out of combat: it formed up far to the rear of the advance echelons. *Thorakitai* were obviously preferred to hoplites when it came to operating with light advance forces against an enemy deficient in heavy infantry.

The attack of the Aetolian cavalry is also of interest. Peltasts have been encountered facing off cavalry in *sunaspismos* after a river crossing and at the battle of the Arius river. This being the case, why were the *thorakitai* ridden down at Caphyae? The answer is clear from Polybios' account. The *thorakitai* were disordered because they had advanced into position at the

double, and Polybios makes much of the speed and vigour of the Aetolian attack. Thus the cavalry probably caught the *thorakitai* totally unformed. The incident is important because it underlines the importance of formation for even specialist intermediate infantry.

Achaean *thorakitai* were also used the battle of Mantinea, 207 B.C. (85). They were deployed to the left of Philopoemen's phalanx, together with *psiloi* and cavalry. Polybios is not clear as to their exact positioning or role. They may have been preceded by a line or screen of either or both the other two arms. Polybios also gives no indication of the number of *thorakitai* present, but it is clear that the force was not substantial. In particular, the *thorakitai* did not hold a substantial sector of front as, for example, the Ptolemaic or Seleucid peltasts and *agema* did at Raphia. Their tactical role is also open to discussion. Probably they were expected to support the *psiloi* and the cavalry, and to provide a mobile defence linking the flank of the phalanx to the rising, broken ground on the left of the Achaean army. We cannot tell which part of their intermediate role, light or heavy, the *thorakitai* were expected to take up; probably both as circumstances demanded. As it was, the *thorakitai* and their comrades were swept away early in the battle by a rapid attack by the Spartan right.

Finally, Achaean peltasts fought with Pergamene troops at the battle of Magnesia in 189 B.C. (86). A mixed force of Achaean and Pergamene peltasts formed part of the allied force which held the right centre of the Roman line, under the command of Eumenes of Pergamum. This force

extended the Roman centre much as the Ptolemaic and Seleucid peltasts did at Raphia. Their role at Magnesia is not made clear by the sources, but Eumenes' command as a whole countered and destroyed the attack of the Seleucid chariots. We can, however, make little of this incident since the sources only specifically mention cavalry and *psiloi* being involved.

There are other references in sources, literary and epigraphic, to peltasts serving in the armies of other Greek minor powers. Unfortunately no detailed record has survived as to their tactical employment. Furthermore, certain references in the sources may disguise a wider use of peltasts beyond those examples cited above. The peltast was often a mercenary soldier and it may be the case that mercenary became synonymous with this troop-type. If, therefore, all references to mercenary infantry in the sources are in fact references to peltasts, then the troop- type was used very widely indeed (87). It is difficult, however, to press this point with any force. Suffice it to say here that peltasts were used widely across Greece and the Near East in the Hellenistic period.

D) Art Evidence for the Hellenistic *Thureophoros*

Troops called *thureophoroi* have occasionally been encountered in the sources and it has been concluded that these soldiers were equipped with a long shield, the *thureos*, and fought as peltasts (88). Although written evidence for *thureophoroi* is uncommon, art representations are relatively profuse. This may suggest that this type of peltast was more widely used than literature suggests. This section will examine art pertinent to our analysis and

in so doing comment on peltast equipment in the Hellenistic period.

The Greeks often named soldiers after the type of shield they carried, hoplite, peltast, etc. and so too the *thureophoros*; who was named after the *thureos*. This was a long, oval shield grasped by a central handle and was probably similar to the Roman legionary shield of the Republican period; indeed, legionaries are sometimes called *thureophoroi* in the sources (89). Often the *thureos* was reinforced by a rib along the centre of the face of the shield. This type of shield is often shown in Hellenistic art (90), but many authors have identified it as of Gallic origin (91). This may well be the case, but this writer rejects the argument that Hellenistic soldiers depicted with *thureoi* are always of Gallic orgin. There are too many references to Greek, or rather non-Gallic, *thureophoroi* in our sources and art evidence is too widely spread to support this conclusion. Gallic mercenaries were used by Hellenistic powers, but not on a scale to warrant the conclusion that all *thureophoroi* depicted in art are Gauls.

Other scholars have identified these soldiers as mercenaries, perhaps garrison troops. Another theory is that a frieze from Sidon of an armoured *thureophoros* shows a member of the 'Roman guard' known to have been in Seleucid service during the reign of Antiochus IV (92). Yet armoured *thureophoroi* may have existed in the Hellenistic period; the sources refer to such soldiers as *thorakitai*.

Due to the nature of art evidence it is obviously difficult to reach hard and fast conclusions. For our purposes it is sufficient to note that there are

examples of soldiers equipped with the *thureos* in Hellenistic art. Such examples indicate widespread use of such equipment, more so than do our written sources. Further they show what equipment might have complemented the shield of the *thureophoroi* - tall Macedonian boots, helmet, long sword and spear; the Sidon example adds mail body armour.

The equipment depicted in such art obviously does not belong to phalanx troops, and appears very similar to that carried by Iphicrates' peltasts. They may, therefore, show what the intermediate infantryman carried into battle. The long shield would have been better suited to dispersed warfare than the small *pelte* of the phalangite as it covers more of the soldier's body. The long sword suggests a soldier who fenced as an individual, like a Roman legionary, rather than a fighter in a mass formation like a hoplite or *sarisaphoros*; both of whom depended on their fellows for offensive power and defensive protection. Art also shows a long spear, a weapon that could obviously been used against other infantry, but was more importantly an anti-cavalry weapon. Finally these soldiers are equipped with varying quantities of armour. Some have only their tall boots and helmets for protection, whereas one example wears a complete suit of mail. If javelins were added to this panoply, then we have a picture of an infantryman who would have been very close to the theoretical type suggested by the tacticians. When art and literary sources are married it becomes clear how the soldiers in the fighting in the Porphyrion pass or at the Axius river could have cleared away light troops defending strong positions or repelled massed

cavalry attacks.

E) Conclusion

The sources, on balance, do support the existence of an intermediate type of infantryman. An origin for the new type can be deduced from later Classical evidence when reforms were made to the standard peltast and Spartan counters to peltasts were taken into account by commanders of light troops. From these beginnings, a new breed of specialist was born. Initially, small groups of experienced professionals added an additional dimension to Greek warfare, providing armies with troops capable of undertaking dangerous missions in rough terrain. In time this new type of peltast came to be a common part of the Hellenistic commander's tactical repertoire and can be found fighting in many of the actions of the period.

Given our acceptance of the veracity of the original statement of the tacticians that a peltast fell between hoplite and *psilos* we need to gather together the evidence to establish precisely how a Hellenistic peltast fought and how he fitted into the overall tactical system of the period.

The Hellenistic peltast was equipped to perform a special role in both tactical and strategic operations. This dual role was reflected in his equipment and at times this created problems in his defensive equipment. The peltast was lightly equipped - most did not wear body armour, the exception being *thorakitai* - and this would have placed the peltast at a disadvantage when faced by formed, armoured infantry in hand-to-hand

combat. Further, these peltasts were not equipped with a weapon like the *sarisa*, a weapon designed to protect the unarmoured infantryman by keeping enemies at a distance. Peltasts could, however, form *sunaspismos*. Polybios specifically refers to this formation once, and other references imply that this reference is not isolated. *Sunaspides*, however, when used by peltasts, must refer to close formation rather than literally locking shields, as with a phalanx. Peltasts would not have been able to form a mutually defensive shield-wall, like the hoplite, or a serried line of *sarisai*. If peltasts were equipped with the traditional *pelte* then their shields would not have been wide enough to overlap, nor would their spears have been long enough to compensate for this lack of protection as happened in the *sarisa* phalanx. If the *thureos* was carried, then it was altogether the wrong shape. It seems, therefore, that peltasts could not normally be expected to hold the main line of battle. The references cited for the poor quality of mass Achaean peltasts when used in a main line role supports this argument. Further, in those battles where peltasts supplemented the *sarisa* phalanx, they are always deployed on the flanks of the main infantry centre, often opposite similarly armed troops. The peltast did not, therefore, usurp the *sarisa* phalanx as the infantry base of a Hellenistic army; his equipment simply was not up to facing a *sarisa* phalanx on its own terms.

If the peltast could not face the *sarisa* phalanx on level ground then what of broken terrain? Here a proper tactical role in a set-piece battle existed for peltasts. Where sectors of the battle field were broken by rough ground, the

special tactics of peltasts allowed them to challenge even the *sarisa* phalanx. The outstanding example is Sellasia, where Macedonian peltasts fought with considerable success on the slopes of Mount Euas against Eucleidas' phalanx. It is clear that any rough ground gave the peltasts the chance to meet the enemy on their terms, i.e. in a situation where individual prowess in battle counted rather then strength of formation. The critical weakness of the *sarisa* phalanx was its formation, which, once disrupted, made the individual *sarisaphoros* very vulnerable. The tactics used at Sellasia made maximum capital out of this weakness. We have presumed small unit attacks using a combination of hand-to-hand and missile weapons slowly wore down the integrity of the Spartan phalanx until it was reduced to a swarm of individuals. In such circumstances the tactical roles of phalanx and peltast were reversed, and the latter's equipment gained the upper hand. One might question how successful the intermediate peltast would have been when opposed by a Classical hoplite phalanx, whose equipment was more suited to individual fighting. Further it is noteworthy that peltasts did not cross weapons with Roman legionaries, soldiers whose tactics would have been similar to peltasts and whose protective equipment was better.

Against missiles the peltast would have been amply protected. As most *psiloi* in the Hellenistic period did not use shields, peltasts would have been better protected in any missile exchange. On the one hand, the *pelte* would have been an excellent shield when opposed by missilemen, since it was light and easy to manipulate. Ancient missiles were slow enough to be dodged or

caught on such a light shield. On the other, the *thureos* was a long body-shield which protected the carrier from neck to knee, and it too would have offered adequate protection. Against *psiloi* the peltast would have been amply equipped to exchange missiles. When the offensive weapons and flexible light infantry tactics are taken into account, the peltast would have become a formidable opponent for Hellenistic *psiloi*.

The peltast was well equipped for offensive action; indeed this writer would argue that they were second only to the *sarisa* phalanx in this respect. Evidence shows that long swords and spears, and perhaps javelins, were carried. It would be logical to assume that peltasts could have operated either as individuals or in closed formation. The equipment carried by peltasts would certainly point towards such a conclusion. The shield carried could have been gripped in one hand and used in individual combat much as a Roman legionary would have fought with sword and *scutum*. The peltast could have fought shoulder-to-shoulder with long spear and shield should the tactical situation warrant it. They certainly could not stand up to a phalanx, but one presumes they would have been the match for any other types of infantry on the Hellenistic battlefield.

Where peltast close-order tactics occur most commonly in the sources is when they are fighting cavalry. The one occasion where the *sunaspismos* was formed is one such example. Once more their weapons would have been amply suited to fending off cavalry and this would have given the troop-type a massive advantage when compared to *psiloi*. *Psiloi* had little answer to

cavalry as their one great defensive advantage, fleetness of foot, was of no effect when faced by mounted soldiers. A skirmish screen could, therefore, be easily swept away by relatively small numbers of cavalry - witness the actions of Philopoemens's cavalry at Sellasia as an example. Peltasts were under no such disadvantage. They could skirmish with an enemy line and form a dense anti- cavalry formation, bristling with long spears, should enemy mounted troops come near. The best example of the strengths of Hellenistic peltasts in this area comes from the Axius river. The peltast line at the Axius must have withstood many charges by the Bactrians before Antiochus intervened with his guard cavalry, and from what is known of Bactrian cavalry of the period they were akin to Hellenistic lancers; indeed, they may have been more heavily equipped, since the region had such a long cavalry tradition (93). At the Axius, therefore, peltasts probably withstood a sustained mounted assault equal to any recorded in military history.

The offensive equipment and tactics of Hellenistic peltasts would have been greatly enhanced by their being commonly deployed on broken ground, where maintainance of rigid formations would have been impractical. In such circumstances they would have been superior in close action to any other troops of the period.

Peltasts were also employed in strategic roles and it is clear from the sources that they were critical to the army's success. Hellenistic armies operated over an area of the world that contained all types of terrain. The sources record that peltasts were called upon to fight in situations where

phalanx and cavalry were useless, and where *psiloi* lacked the necessary hand- to-hand capabilities to ensure success. Peltasts, often with the support of *psiloi*, could be expected to secure all types of hostile ground. The examples of mountain fighting illustrate the unique qualites of the peltast in strategic operations. The *thureophoroi* and *thorakitai* who fought for the Porphyrion pass, used missiles and close combat to dislodge a series of strongly emplaced enemies. The equipment of these troops and their high professional standards were essential to the success of the operation. Given the flexible and fast moving nature of Hellenistic warfare, the peltast had a key role as scout, commando and member of flying column. Without the new peltast, Hellenistic armies would have faced many strategic bottle-necks in their campaigns across Greece and the Near East.

The strategic functions of the peltast far overshadowed their tactical uses. Although they could fight as skirmishers or as close-order infantry, it was clearly to the specialists, the phalanx and *psiloi*, that the main weight of these areas of responsibility fell. There were few occasions where unusual terrain allowed the peltasts to contribute their skills to an army's tactical operations. For the most part, e.g. at Raphia, Hellenistic commanders had no special place for their peltasts and in such cases peltasts were placed on the flanks of the phalanx next to the cavalry. It is a reasonable assumption that no special role was intended for these peltasts, the intention being simply to keep them out of the way of the enemy's *sarisa*-armed infantry - against whom peltasts would have been little use - and to extend the battle line to make an

enveloping movement by hostile cavalry that much more difficult

Battles such as Raphia show that commanders deployed their peltasts in line simply because they were there, to place more bodies in the front rank. It is noteworthy, however, that peltasts could be trusted to stand in the main line of battle, in a manner that peltasts of the Classical period never had been. Classical peltasts were deployed in the same fashion as Hellenistic *psiloi*, to the flanks or the rear of the main battle line.

The intermediate peltast fits well into the all-arms concept that was the hallmark of Hellenistic warfare. A troop-type of his kind had many important roles to play in the operations of armies committed to fighting in rough terrain and against a variety of enemies. The tacticians are the only ancient sources to specify this intermediate role - a footsoldier who was at one and the same time a line- and a light- infantryman. The historical sources, however, record so many examples where such an infantryman is surely in action, that we must accept the tacticians at face value. The new peltast was a specialist that facilitated success in all types of terrain and in all military situations. It seems that these soldiers were prized and that they formed part of the armoury of all Hellenistic states, large and small. Without them Hellenistic commanders would have found war more demanding and have faced strategic and tactical situations to which they would have had no answer.

## Chapter III - *Psiloi*

### A) Introduction

This chapter examines the equipment and tactics of light infantry in the Hellenistic period. In particular the light infantryman of the period will be studied within the overall structure of the Hellenistic military system. The Greeks used many words for light infantry; for the sake of continuity we shall refer to such troops by the term *psiloi* (1).

*Psiloi* were a feature of almost all ancient armies. They fought with little or no armour in loose formations. Their tactics were based on shooting from a distance and they used fleetness of foot to keep out from danger. In Classical and Hellenistic warfare *psiloi* performed those vital operations that were beyond the capabilities of the heavier infantry, for example fighting in rough terrain or scouting.

*Psiloi* equipment was comparatively inexpensive when compared to the hoplite panoply. *Psiloi* were not dependent on the resources of the Greek *polis* or the Hellenistic monarchies, nor did they need the support of a complex agricultural system. This allowed, firstly, Greeks from the lower classes to serve in the army and, secondly, the more backward areas of the Greek world to deploy powerful, effective forces of *psiloi*. In the Hellenistic period the great monarchies could also supplement their manpower with subjects from the more backward areas of their kingdoms who were specialists in light warfare. Certain peoples in the ancient world became experts at *psiloi* warfare, notably the mountainous areas of central Greece,

Aetolia and Arcarnania (2).

In the Hellenistic period *psiloi* formed a specialist branch of the army. They were reconnaissance troops and rough terrain specialists, either on or off the battlefield. *Psiloi* often performed those tasks associated with modern guerillas or commandos. In many Hellenistic armies *psiloi* were drawn from the native population and they fought in their own traditional style. On some occasions the sources show masses of *psiloi* in action; on others *psiloi* were small professional bodies of men. Many different types of light infantry are encompassed by the general term *psiloi*, each having distinct ethnic backgrounds, dress, weapons and traditional ways of fighting.

*Psiloi* warfare was very sophisticated by the Hellenistic period. Formalised *psiloi* tactics, however, originated in the Classical period and so it is in the earlier period that we shall begin our survey.

B) *Psiloi* in the Classical Period

*Psiloi* were a common feature of Greek armies throughout the Classical period; for example large numbers were present at the battle of Plataea in 479 B.C. (3). Our examination, however, must concentrate on the later Classical period because it was then that *psiloi* tactics began to be placed on a formalised footing. In the early Classical period *psiloi* appear to be little more than poorly armed mobs; for example many of the *psiloi* at Plataea were *helot* servants, with little to contribute to warfare. The strategic and tactical demands of the Peloponnesian War, however, changed the nature of

war, forcing the Greeks to bring *psiloi* warfare onto a more formalised footing and make it an important adjunct to the hoplites who had until then dominated war.

The nature of hoplite warfare meant that the hoplite was the superior troop-type in formal set-piece battles. There were, however, many military tasks that were beyond the capabilities of hoplites. Before the Peloponnesian War commanders had accommodated these deficiencies within their armies, but the changing strategic climate at the end of the fifth century forced them to incorporate new support elements into their armies.

The vulnerability of an army that was composed mainly of hoplites and was deficient in *psiloi* is best illustrated by Demosthenes' campaign in Aetolia in 426 B.C. (4). Demosthenes blundered into central Greece with very little appreciation of the strategic problems that would face a hoplite army. The terrain of the region was broken, wooded and hilly, poorly suited to hoplite tactics. His men suffered terribly in the fighting. They were surrounded by enemy light javelinmen and were shot down without being able to reply. It was only with the greatest difficulty that Demosthenes and his army made its way out of the mountains and to the safety of the coast.

The campaign of 426 B.C. demonstrates the tasks to which *psiloi* were best suited. Hit and run warfare was their speciality, especially in broken terrain. They fought a guerilla war against more organised opponents. They also excelled at reconnaissance. Thucydides' account records that on the one hand the Aetolians had ample warning of Demosthenes's approach, on the

other the hoplites fought blind. Campaigns like that fought by Demosthenes became commonplace in the Peloponnesian War (5). If hoplite armies were to survive in such an environment, they needed to support their heavy infantry with light troops. Fortunately for the hoplite generals, *psiloi* had always been available for service in their armies, but had been generally ignored. What the Peloponnesian and subsequent wars in the Classical period did was to give *psiloi* a higher priority in the military system of the time.

Classical warfare was fundamentally changed by the Peloponnesian War, and for the rest of the Classical period Greek armies had to cope with the problems posed by a large theatre of operations with diverse terrain. Once *psiloi* became a part of the Classical army, they stayed; indeed the low intensity operations for which *psiloi* were ideally suited become common-place in the sources. In the Corinthian War, for example, *psiloi* are not only found fighting in the rough terrain of northern and central Greece, but we also find them in the open, flat land of the south, raiding, harrying and carrying out all manner of military activity as Xenophon's account amply demonstrates (6). In short, by the later Classical period, warfare had changed and armies that relied on hoplites alone were obsolete. Light support troops were needed to screen the heavy component of an army.

Sociological factors also influenced the expansion of *psiloi* numbers in the later Classical period. We have already seen that the rowers of fleets or the urban poor could easily be equipped as *psiloi* (see above p.127). The expansion of the area and time in which war was fought placed considerable

pressure on the military population of Greece. Increased use of *psiloi* allowed the lower classes of the city-states to contribute to land warfare, men who until this point had only served the state as rowers. In addition foreign mercenaries, most of whom were *psiloi* - for example Thracians - could be imported to supplement the manpower of the city-states. The larger areas of operation in the later Classical period prompted larger armies and accelerated the trend towards a general adoption of *psiloi* as a regular component of Greek armies.

Finally, *psiloi* formed the bands of mercenary soldiers that became ever more popular as the Classical period went on. Leaders such as Iphicrates and Chabrias perfected *psiloi* tactics and made this arm a professional fighting force. Many of the mercenary units of the period were better trained and motivated than their hoplite counterparts. This trend acted as yet another factor that prompted wide adoption of light infantry in the armies of the later Classical period.

*Psiloi* became an invaluable part of the armoury of the Classical city-state. As the period went on, generals learnt to use *psiloi* to screen their hoplites in difficult terrain, to scout and raid, and *psiloi* assumed a central role in the strategic battle. In the tactical sphere, however, Classical warfare was still dominated by the hoplite battle. The hoplite remained the only arm by which war could be won. *Psiloi* were auxiliaries whose mission was to supplement the hoplites in special strategic situations, but in battle *psiloi* contributed little to eventual victory.

C) Equipment

The tacticians record that *psiloi* were the lightest type of infantry, who fought with missiles from a distance, javelins, bows, slings, even rocks (7). By implication, the tacticians did not believe it necessary for these troops to carry a shield, but, as will be shown, evidence shows that some *psiloi* carried such equipment. Armour was not worn by *psiloi*, since, firstly their mission required them to be fast, and, secondly, *psiloi* were recruited from groups too poor to afford armour (8). Clothing would have been inexpensive, simple and traditional. Very little specifically military dress would have been worn by *psiloi* and national costume would have been most common (9). The emphasis would have been on ease of movement. Heavy or bulky clothing would have slowed down the *psilos*, potentially fatally, and might have hampered javelin throwing.

It is not clear how common shield-use was amongst *psiloi* in the Hellenistic period. We have discussed this question above (p.127) with regard to peltasts and the conclusion was that the Classical peltast was essentially the same as the Hellenistic *psilos*. Thus some Hellenistic *psiloi* may have carried the *pelte*. Several literary sources from the Hellenistic period also indicate Cretans used shields, which is puzzling as these troops were archers and would have required two hands to use their bows. Republican Roman *velites*, javelinmen, also used shields and it may be inferred that some Hellenistic javelinmen followed suit. Later slingers are

also sometimes shown with shields. Javelinmen and slingers - and Cretan bowmen - may, therefore, have been equipped with shields, and indeed the former two would have been able to use a small shield such as a *pelte* whilst still wielding their one handed missile weapons (10).

The use of sidearms by *psiloi*, be they sword, axe or dagger, also poses problems. There are instances in the Hellenistic period where advance groups of *psiloi* fought at close quarters and in some campaigns hand-to-hand combat between skirmishers seems to have been commonplace. It is also the case that *psiloi* are sometimes depicted in art wearing side-arms. Although there are no direct literary references to such weapons, they would have been of use to light infantry and within the economic reach of these soldiers (11). We can assume, therefore, that most *psiloi* carried some form of light hand-to-hand weapon.

*Psiloi* were expected to shoot from a distance, and thus any side arms were secondary weapons; what mattered were the javelins, slings and bows carried by these soldiers. We shall start our examination of ancient missile weapons with the javelin, perhaps the most common missile used by Hellenistic *psiloi*.

The Greeks refered to this weapon as the δόρυ or ἀκόντιον, and we shall call this sub-group of *psiloi* by their common ancient name *akontistai*. *Akontistai* carried a number of javelins in order that a sustained barrage could be shot into enemy formations. We cannot be certain as to how many were carried, but one source, the Jewish Rule of War, refers to seven (12).

The javelin was a common subject for ancient artists and it appears to have been a slim weapon approximately four feet in length. Some illustrations show the javelin realistically vibrating in flight, indicating the speed at which the weapon travelled to its target. The ancient javelin was, however, robust enough to be retained for hand-to-hand combat (13). The *psilos* appears to have thrown the javelin much like a modern athlete does, with a run up of some distance followed by an overarm throw. An occasionally illustrated variant is the under-arm throw, which is still used today by primitive cultures: it is inaccurate but capable of propelling the javelin a considerable distance. *Psiloi* may have, therefore, varied their style of release to gain distance or accuracy depending on the prevailing tactical situation (14).

The range and accuracy of the ancient javelin was increased by the use of a device called an *amentum* or ἀγκύλη (15). This was a thong wound around the midriff of the javelin. Evidence indicates that this was done in two ways. Firstly, the thong was a long, thin strip of leather, probably four feet in length. The soldier wound this around his javelin before release. Secondly, the thong was made an integral part of the weapon in the form of a permanent loop attached to the centre of the javelin. This loop appears to have been attached to all military spears, be they designed for hand-to-hand combat or as missiles. It was probably not only a fail-safe device should the soldier accidentally drop his weapon, but also a help in slinging the weapon for carriage on the march. Throwing-spears often have a much longer thong

which could be wrapped around the spear shaft, producing an effect similar, but probably inferior, to the proper throwing-thong. The major difference between the two styles was that the second gave the soldier a ready supply of ammunition prepared before combat, giving a higher rate of missile discharge.

Modern tests have shown that the use of a throwing-thong greatly adds to the performance of a javelin. The spin imparted by the thong makes the javelin more accurate and it also adds to the leverage exerted on the weapon as it leaves the thrower's hand. In effect the thong makes the thrower's arm longer and as a result the javelin's range and force upon impact increases. A pottery illustration from Attica admirably shows the thong in use (16). The example shows a cavalryman releasing a javelin at a close target. The javelin is of the looped type and although the javelin has left the horseman's hand, he still retains hold of the thong, adding momentum to the missile.

Several modern authors have discussed the range of the ancient javelin. A javelin could be expected to travel twenty metres without a throwing-thong and not withstanding the efforts of modern athletes with their superior diet and scientifically controlled training, this figure is probably accurate for the ancient soldier. A colonel in Napoleon III's army conducted tests on javelins with thongs and concluded that this simple device quadrupled the range to eighty metres. If this figure is correct, and modern tests support it, extreme ranges for hand-hurled missiles may have approached the effective range of bows (17).

The sling, compared to the javelin. was a specialist's weapon. Certain Mediterranean peoples were noted for their expertise and appear as mercenaries in armies of the period, for example Balearic or Rhodian slingers. When we encounter slingers in Hellenistic armies they are in small groups of well-trained, professional soldiers.

The sling was a simple leather thong some four feet in length. A pouch was fitted to the centre of the thong, into which the missile was placed. To shoot, the slinger grasped the two ends of the sling in his right hand. The missile was placed in the sling and the thong rotated around the slinger's head, the end of the sling reaching speeds around eighty kilometres per hour. The slinger then released the one end of the thong, the other being tied to or gripped firmly in the hand. The bullet left the weapon, travelling at a tangent to the arc inscribed by the sling's rotary motion.

The bullet shot by a sling could be made of lead or stone. The former were cast specially for the task, were more aerodynamic and probably carried further than the second type, which were pebbles selected for their shape. Sling bullets recovered from excavations are sometimes inscribed with messages, like 'take that'. Others have the names of monarchs: for example bullets from Olynthus are inscribed with Philip II's name, and this may indicate the use of central arsenals for ammunition. Other types of bullet were fashioned as a compromise from clay, aerodynamism coupled with ease of and inexpensive production. Missiles have been found to vary in weight. One modern scholar gives a maximum of one hundred and eighty-five grams,

a minimum of of thirteen grams. The volumes of these examples also vary, from five to sixty-five cubic centimetres. It is possible that slingers could have carried missiles of varying weights, selecting the most suitable bullet for the range and target.

The range of the sling is open to debate. Xenophon recorded that Rhodian slingers marching with the Ten Thousand could outrange Persian bowmen! It is probable that there was a lot of variation in performance due to the type of shot used and the skill of the slinger. Korfman calculated a range of four hundred metres for the ancient sling, an approximation as good as any.

Trajan's column shows Roman auxiliary slingers carrying shields and we can conjecture that this practice may possibly have been used in Hellenistic times. Unlike the bow, the sling requires only one hand for operation and in combat this ability to use a shield with a ranged weapon would have given some advantage to a slinger faced by an archer (18).

Livy records the use of a second type of sling, a staff-sling or *kestrosphendone*. The weapon was perhaps a stave the height of a man with a large sling thong attached to the top of the staff, fixed at one end, looped on at the other. It shot a large stone or dart. The staff was loaded and held overhead in a horizontal position with both hands. By jerking the sling forwards and downwards the looped thong end would detach and the missile would leave the weapon. Livy states that the *kestrosphendone* was developed to penetrate the shields of Roman legionaries by the Macedonian king

Perseus. The late Roman writer Vegetius supports Livy with regard to the power of this weapon (19).

Finally we come to the bow, a weapon commonly used by Oriental soldiers, both on foot and mounted. Modern scholars have reached a general consensus that the range of the ancient bow was some five hundred metres, based, notably, on Turkish archery records set in the last century. These figures were set in near perfect conditions, with special bows and master archers. Ancient soldiers might have expected to shoot an arrow at most one hundred and eighty metres, with an effective range of no more than one hundred metres (20). Blyth showed that beyond this range performance fell off dramatically, with the result that any armour would stop all but the most superficial wounds (21).

The ancients used two types of bow, the self and the composite (22). There could be a long or a short version of each of these, the advantages of the former being that more energy is imparted into the arrow instead of being absorbed into the bow's arms. The Persians used a longer bow than many ancient peoples, but true longbows were rare, being confined to the Carducii and Indians (23). The composite bow was made of several types of material placed in relation to each other so as to produce a spring; a self-bow was a one constructed from a single piece of wood. Composite bows were common across the Orient in the Hellenistic and later periods. They were widely used by horse- archers because they were short, yet powerful, giving the mounted soldier a handy weapon easy to shoot to either side of his horse. The

Seleucid army deployed large numbers of Oriental bowmen; other armies used smaller contingents. Of the Greeks only the Cretans mastered the use of the bow in large numbers.

Hellenistic armies, with the notable exception of the Seleucids, did not deploy large numbers of bowmen. They normally used small bodies of professionals, often mercenaries, in the same way as slingers. The archer was, however, an important specialist, with an effective role to play in the Hellenistic military machine.

D) The Effectiveness of *Psiloi* Weapons

The effectiveness of ancient missile weapons can be determined in two ways, by comparison with similar modern weaponry and through the use of the sources. For the latter we must be aware of a possible bias. Western warfare has been generally fought at close quarters, light troops being an adjunct to those who fought in the main line of battle. Western literature has echoed this trend, fighting at a distance being seen as unworthy by ancient authors. Thus our sources may play down the effectiveness of missiles, to the detriment of our study.

The most useful scientific analysis of the effectiveness of ancient missiles was written by Blyth (24). His study centred on the effectiveness of arrows from the period of the Persian Wars, but in completing his thesis he included analysis of the other *psiloi* weapons. Blyth showed that armour of any sort seriously degraded the effectiveness of missiles, but he also demonstrated that in theory shooting missiles at an enemy had a far higher

chance of inflicting injury than hand-to-hand combat.

References to the effectiveness of missiles in the sources are scattered and for ease of reference they will be analysed according to the tactical situation in which they arise. Firstly, assaults on defended positions. At the battle of the Granicus river the Persians lined the bank of the river with cavalry and showered the advancing Macedonians with javelins as they crossed. Arrian records that the volley was so dense that the javelins collided in the air, but despite this the Macedonians managed to force a crossing. We must also note Arrian's comment as to the superiority of the Macedonian lance over the Persian javelin (25).

At Issus the Persians also deployed with a view to shooting down the Macedonians as they advanced and, although Alexander also won this encounter, it is noteworthy that he took the precaution of advancing quickly to reduce missile casualties (26). A more light-hearted example comes from the siege of Harlicanassus where two drunks made an assault on the city under intense missile bombardment; they came out of the encounter relatively unscathed, indicating how ineffective the Persian missiles were (27).

A second category is accounts of individuals being wounded or killed by missiles. In general ancient soldiers seem to have survived missile wounds well, ancient weapons not having the deadly shock effects of gunpowder-propelled bullets. Many examples come from Alexander's Persian campaign. Amyntas died of a javelin wound, a fatal case although he appears to have

survived for some time before he died. Abreas was killed by an arrow wound in the face. Darius also met his end at the point of a javelin, but he too survived long enough to die in the arms of one of his Macedonian pursuers. Craterus and many others were wounded in the attack on Cyropolis; most seem to have survived with only minor injuries. In the Scythian attack on Andromachus' detachment, initially a good number of soldiers were killed by arrows, but it is noteworthy that Arrian emphasises mortalities as though they were unusual. Alexander was wounded by missiles many times, often very seriously. Most notable was his experience in India when he was shot in the chest by an Indian longbowman. This wound seriously incapacitated him, but it did not kill him. In the same fight Peucestas received three javelin wounds, but survived to fight later in the Diadochi Wars. At the Hydaspes the Indian king Porus was heavily wounded by missiles and once more he fully recovered from them. At Megalopolis when the Spartan king Agis was transfixed through the thighs by a javelin he fought on until he collapsed from loss of blood, and it took a direct spear thrust in the chest to kill him. A similar incident happened to the Achaean general Philopoemen at the battle of Sellasia. He survived the wound and fought on in the battle. Finally, Pyrrhus' horse was shot from underneath him at the battle of Sparta, demonstrating that horses too suffered from the attention of *psiloi* (28). The evidence appears to show that wounding in battle by missiles was probably fairly common, but that these wounds were rarely fatal.

*Psiloi* could also be used defensively, slowing or halting attacks with the

volume of their fire. We can especially see this in sieges where sallies by the defence were beaten back into the city by missiles. Generally, however, the effects of missiles appear to have been on troop morale and actual casualties inflicted were very small in number (29).

Continuous harassment by missiles could provoke an enemy into a rash attack. For example the Triballians were tempted into open ground by shooting from Alexander's archers and slingers (30). Inability to reply to a missile attack would obviously have disconcerted soldiers and forced rash moves, as an earlier example illustrates. In 479 B.C. the Spartans at Plataea had great difficulty holding under the fire of the Persian army and the Tegean contingent of their force became so pressed that they attacked without orders (31).

Fifthly, battles occurred between opposing groups of *psiloi*. These confrontations either preceded a major engagement or were part of larger skirmishes. These were very long-drawn-out affairs, once again indicating the generally low levels of effectiveness of *psiloi* weapons. An example which illustrates this point is a skirmish fought during the pursuit of Darius III by Alexander. The Agrianians met a force of natives in hills south of the Caspian Sea. Arrian records that they prevailed, but only after a hard, protracted and long-range exchange (32). Another example comes from Alexander's campaign in India, where a force under Ptolemy was isolated. Arrian says that the Macedonians were only saved because they had the better of the long-range fighting (33). Overall fighting between *psiloi* only

caused casualties after long periods of fighting. There are few occasions where forces were destroyed by missiles. On two of these, detachments were cut off and isolated, the first being the destruction of Andromachus' contingent during Alexander's campaign against Spitamenes, the second a massacre of a Roman force just before the battle of Pydna (34). The third reference is to an attack on a marching column, the destruction of Brennus' Gauls (35). The Gallic warriors lacked *psiloi* and were slowly shot down by the Greeks, a situation echoed in a battle between Philip V's army and the Dardanians in Livy (36). In all these examples *psiloi* needed a lot of time and special circumstances to utterly destroy an enemy detachment.

Some situations hindered shooting. At Magnesia wet weather made bow strings and javelin thongs useless (37). The tactical situation could also affect shooting, an example being Curtius' account of the crossing of the Thanais (38). The Macedonians were opposed by Skythian horse-archers and Alexander decided to use *psiloi* as part of the first wave to cross the river, and protection screens were fitted to the boats to give cover. The weapons of these *psiloi* were of little effect when actually crossing the river as they had difficulty shooting whilst sitting. Once at the other bank, however, they stood and let off an almighty volley - one presumes with javelins or, perhaps slings. Obviously *psiloi* had to shoot whilst standing up to be effective.

Height also gave *psiloi* advantages when shooting and there are many occasions where *psiloi* attempted to gain high ground in order to shoot down on an enemy (39).

Finally, regardless of tactical situation, the sources support Blyth's thesis that armour of any sort would reduce the effectiveness of missiles drastically. For example Alexander was shot in the shoulder by an arrow whilst fighting in India, but Arrian records that the wound was not serious and his *thorax* stopped most of the impact (40). Alternatively failure to wear armour gave a soldier a higher chance of becoming a casualty, Porus was also wounded in the shoulder, notably the only part of his body not protected by armour (41). At the siege of Tyre Macedonian soldiers were decimated during construction work because they were not wearing armour (42).

Shields also gave Hellenistic and Roman soldiers excellent protection against misiles. King Agis of Sparta's exploits at Megalopolis are an example: he either dodged missiles or caught them on his shield before eventually being shot through the thighs by a javelin (43). The large oval *scutum* of Republican Roman *legionarii* proved itself to be proof against missiles in all but the most extreme circumstances. For example, during the fighting in the Aoos pass, Livy records how the *scuta* of the legions were so effective a protection against arrows that the Cretan archers resorted to throwing stones (44). The frequent success of the Roman *testudo* also supports the general effectiveness of the *scuta* against missiles. The only reference to a phalanx being affected by missiles comes from Curtius. He records that missiles drove back an attack by Macedonians on the Susian Gates because they were neither in *testudo* - presumably he means *sunaspides* here - nor able to reply (45). We might assume, therefore, that a formed

phalanx was generally safe from missiles, as Livy records at Atrax (46). Finally there are several references to *psiloi* shooting onto the shieldless flanks of infantry and causing casualties (47).

We must, therefore, keep the effects of missiles in proportion. The casualties caused by these weapons were, even in extreme cases, very low. In particular missiles alone could not decide a set-piece battle;their effects were largely confined to skirmishes, ambushes and the like. Curtius leaves us with a stark illustration of the ineffectiveness of missiles. After Alexander's death a fight broke out in the dead king's chamber and Curtius records that numerous javelins were thrown in this confined space, but nobody was killed (48). Testament indeed to the low effectiveness of the javelin.

Having accepted that *psiloi* weapons were not very efficient at killing soldiers in ancient times, we need to fit casualties caused by *psiloi* into their proper historical context. It is the case that ancient casualty lists were very one sided, the winner of a battle losing few men, whilst the loser was decimated. This was because ancient armies only became vulnerable when they turned in rout. Missiles, therefore, are part of a general truth, that ancient weaponry was not as deadly as, for example, black powder muskets. Given this, the actual casualties caused by *psiloi*, although few, were probably equal to hand-to-hand casualties inflicted before the moment of flight. Missiles may have had a very real morale effect on soldiers over a prolonged period of time and hence influenced the outcome of a pitched battle. Further our sources are almost always silent as to the numbers of

wounded caused by fighting and it may be the case that missiles wounded many thousands of soldiers in any given battle. On one occasion, for example, the the majority of men in an army returned to their camp wounded (49). If this number of wounded was typical, then the effects of missiles would have been very real.

In conclusion, the casualties caused by Hellenistic *psiloi* were few by modern standards. Most types of armour could stop missiles. On the other hand, however, most ancient weapons were similarly ineffective in combat and, as such, *psiloi* may have been able to have had a real impact on battle in the period. In order to evaluate this we need to examine the tactical role of *psiloi* in the period.

E) The Tactical and Strategic Role of *Psiloi* in the Hellenistic Period

It has already been shown that *psiloi* warfare predated the Hellenistic period and, as such, many of the rules governing their employment were already well tried. In this section we shall concentrate on the role of the *psiloi* in set-piece actions and specialist strategic operations. We shall also only differentiate between the various types of *psiloi* when it is relevant to the analysis.

*Psiloi* are the most difficult of all the Hellenistic combat arms to analyse in a tactical context. These soldiers did not contribute to the decisive

moments of battle, either as solid infantry lines or bold, attacking cavalry. Often their role is very subtle, involving small numbers of men; they fight before and after the main action. Because of this our sources often ignore *psiloi*, concentrating on what was seen as the more glorious or decisive actions of battle. *Psiloi* appear in a better light in their specialist strategic roles, where their exploits were not overshadowed by the heavier combat arms. These tactical and strategic roles can be categorised and we shall examine each situation in turn.

(a) The Use of *Psiloi* as a Skirmish Screen

*Psiloi* screened both line of battle and line of march, and as a result this function can be found in both strategic and tactical situations.

In battle, screens were normally deployed at the beginning of the action, the *psiloi* moving to the flanks or rear of the main body once the heavy troops closed and the fighting proper began. This tactic brought many advantages. It concealed an army's deployment, depriving the enemy of vital intelligence. On occasion commanders discovered the enemy's deployment and hence some indication of his plan of battle. For example, at Gabiene Antigonus could look down on Eumenes' line; at Gaza Ptolemy and Seleucus received information from a deserter as to Demetrius' deployment and they changed their battle plan accordingly (50). A screen of *psiloi* would also protect the heavy infantry and the cavalry in the initial stages of battle when both sides were drawing up their lines. It is noteworthy that deployment for

combat was conducted without interference in all the major set- pieces of the period. Opposing screens seem to have rarely engaged in hand-to-hand combat, so presumably fighting was limited to long range, largely indecisive, skirmishing. A notable exception to this is Cynoscephalae, where a furious battle between *psiloi* escalated and caused the combat proper to begin (51).

In most actions *psiloi* screens are only recorded in the initial stages of the battle. Once the main lines close the *psiloi* disappear from the account as they fell back to flanks and rear. The sources have recorded how this withdrawal was completed. At Sellasia *psiloi* on Mount Olympus were recalled by trumpet, presumably falling back through the phalanx to the rear (52). We have already determined that the loosest phalanx formation had a gap between files of six feet (see above p.53ff and note 88 for discussion), enough for a dispersed formation of *psiloi* to pass easily through the line, as Appian records happening at Thermopylae (53). Alternatively they may have passed through gaps between sub-units. Once again some phalanxes formed in "alternate *speirai*", presumably with gaps along the line between sub-units. Another method, if there was room and time, was to pull the *psiloi* out to the flanks of the heavy infantry. Examples of this can be found at Cynoscephalae and perhaps at Magnesia (54). A possible disadvantage of this tactic might be a sudden enemy attack which might pin retreating *psiloi* onto the main battleline, disordering the heavy infantry just before contact.

The use of *psiloi* as a screen in set-piece battles was not a Hellenistic innovation. For example screens of light troops were used in the fighting

outside Syracuse in 415 (55). The size and increased sophistication of the all-arms Hellenistic armies may have made screens a more of a necessity than they had been in Classical warfare.

*Psiloi* were also used to screen marching columns. In general *psiloi* formed up to all sides of a marching force, but local circumstances sometimes led to a strengthening of certain faces of the column. For example a retreating army would protect its rear more than its van, as the Aetolians did at Caphyae (56).

The screen could also be placed at varying distances from the main body. *Psiloi* could act as an early warning device or they could fight their way through difficult terrain, preparing the way for the main army. On occasion *psiloi* and other arms could be broken away from the army to act as an independent force, screening the army in a truly strategic sense - this is dealt with in detail below. The flexibility of Hellenistic *psiloi* made them adept at this style of warfare. It was general military doctrine to cover any army in movement with clouds of *psiloi*. As a result Hellenistic armies were very efficient at protecting themselves from surprise attack or fighting in rough terrain. No Hellenistic army suffered from the "guerilla" style tactics used on Demosthenes' Athenian army in Aetolia or a large ambush like that inflicted on Flaminius at Lake Trasimene (57).

(b) *Psiloi* Used as Part of a Flying Column

The equipment of *psiloi* lent itself well to independent operations. A

flying column has been a standard strategic instrument throughout military history. Normally they have consisted of fast moving, lightly equipped soldiers. The normal technical term for their missions is *coup de main*, the seizing of strategic objectives by audacity and surprise. In the Hellenistic period flying columns could consist entirely of *psiloi* or forces of *psiloi* and other arms, most often cavalry. The flying column was more widely used than in the Classical period, perhaps due to the much larger area of operation and varied terrain faced by Hellenistic commanders.

A common strategic target of Hellenistic commanders were 'choke points', for example mountain passes, that might slow down an army's advance. Many examples of this strategy in action come from Alexander's Persian campaign, most striking being his attempts to capture the numerous 'Gates' that periodically blocked his advance (58). Use of flying columns became a common technique in the Near East to clear strongpoints of small forces that could potentially delay an entire army.

The motives for using flying columns in Hellenistic Greece were different. The capture of strategic nodal points was, of course, still critical, and the numbers of cities in Greece added another factor, momentum, to the use of flying columns. In the later Classical period, in particular during the Corinthian War, fortified places dominated campaigns. Even in the Hellenistic period, when siege warfare was comparatively sophisticated, walled cities could hold up armies for long periods of time. Fast strikes either to catch strong points unawares or simply as an alternative to inactivity

became a normal feature of war in Hellenistic Greece. Many examples of these techniques in action come from the history of Philip V's Macedonian army (59).

Flying columns could also cause a good deal of economic damage, especially in a geographically confined area such as Greece (60). In the Classical period detachments from armies roamed the countryside burning and looting, and in the Hellenistic period this strategy became more widespread and systematic. In many ways warfare in Hellenistic Greece was dominated by this type of warfare, so much so that pitched battles were relatively rare in the period.

The composition of flying columns varied, but *psiloi* were almost always used, supplemented on occasion by other troop types. *Psiloi* were at an obvious advantage in this form of warfare: they could fight in any type of terrain,and their tactics would keep them out of hand-to-hand combat allowing them to choose when to avoid combat. Cavalry were the second most common type of soldier found in flying columns and it is noteworthy that the sources only rarely record that *psiloi* were unable to keep up with their mounted comrades, a notable example being the *psiloi* contingent of Alexander's force in pursuit of Darius, five hundred of whom had to be mounted on spare horses to keep up (61).

Peltasts were also sometimes brigaded with *psiloi* to form a flying column (62). The intention may have been to provide the *psiloi* with a partner capable of forming a proper line of battle, yet able to move quickly

across country. There are also a few examples, most coming from Alexander's Persian campaign, of phalanx-troops being used in conjunction with *psiloi* on independent missions. This has influenced the debate over phalanx equipment (see above p.29). On these occasions, the role of the *psiloi* may have been protective, to shield the phalanx from dangerous situations such as being attacked by enemy light troops whilst unscreened. As we have seen above with Demosthenes' Athenians, this could spell disaster.

(c) *Psiloi* and their Relationship to Chariots and Elephants

*Psiloi* were often used in concert with elephants, either as escorts or as anti-elephant troops. This special relationship was so common in the period that it needs some examination.

Mixed detachments of *psiloi* and elephants first appear in the Diadochi Wars; for example at Gabiene, where both sides deployed *psiloi* in the gaps between their elephants (63). As the Hellenistic period went on, *psiloi* became usual companions to elephants on the battlefield. Both Diodorus and Appian refer to elephants deployed on the battlefield 'with their usual guard' or 'the unit that always accompanied them'. Bar-Kochva has examined the evidence and concluded that in the Seleucid army each elephant would be surrounded with fifty *psiloi*, men and animal acting as a single tactical unit. These escorts could be equipped with any of the standard *psiloi* missile weapons, although bowmen and slingers predominate, archers always forming part of the guard. We must also note that these troops were

specifically attached to the elephants; they are not simply support troops drawn from the general *psiloi* contigents in an army as an *ad hoc* measure (64).

The function of this guard is not explained in the sources. On examination the elephant/*psiloi* combination might perform two functions. Firstly, the *psiloi* would protect the elephant. Elephants were vulnerable to harassing tactics by *psiloi,* by attacking certain weak points, for example the animal's eyes or the mahout, and ancient weapons could kill an elephant outright or injure it, making it panic. Placing friendly missile troops in close co-operation with elephants would serve to keep enemy *psiloi* at a distance, forcing them to shoot at the elephant from outside effective range. Furthermore elephants could not expect to charge *psiloi* effectively as they might a phalanx. Unescorted elephants could only stumble into *psiloi* to be absorbed by the flexible *psiloi* formations, surrounded and shot down. The addition of an escort would have prevented elephants being halted by a screen of light troops.

Secondly, the *psiloi* would have been protected by the elephant, especially against enemy cavalry. *Psiloi* were very vulnerable when faced by cavalry, since they did not have the equipment to form a phalanx to face up to mounted soldiers, nor could they outrun horses. *Psiloi* faced disaster if caught by cavalry in the wrong situation, an example being the charge of Philopoemen's cavalry at Sellasia, where they swept through a Spartan centre composed almost entirely of *psiloi* (65). Elephants frighten horses and

generally keep cavalry at a distance (66). Such a tactical mix would have been doubly dangerous for cavalry, the horse being unable to close with the elephants and subject to missile fire from the *psiloi.*

The sources record numerous instances where elephants fell foul of *psiloi.* From the first encounter of the Hellenistic military system with elephants, at the Hydaspes, *psiloi* became the standard anti-elephant weapon. At Gaza, in 312 B.C., Ptolemy modified normal tactics, equipping his *psiloi* with chained obstacles to keep enemy elephants at a distance, confining their movements and making them better shooting targets (67). As the period went on, escorts of *psiloi* were added in an attempt to neutralise the vulnerability of elephants to light troops. Overall, the use of *psiloi* together with elephants, both as allies and adversaries, is a good example of the Hellenistic military system at work, close co-operation between different combat arms in response to a varied battlefield threat.

*Psiloi* were equally effective against chariots. All chariots used in the Hellenistic period were attack-vehicles, as opposed to platforms for archers. The mobility of *psiloi,* their dispersed formations and missile weapons made them an ideal counter to this type of chariot. Hellenistic armies first met chariots at Gaugamela where Darius launched a frontal scythed chariot attack at the Macedonian phalanx. It failed because the phalanx opened ranks to allow the Persian vehicles to pass through its formation. Once in the rear, Macedonian *psiloi* dealt with this threat with ease (68). At the battle of the Hydaspes, Porus, the Indian general, sent forward his son with a force of

chariots to fight Alexander's outflanking force (69). These vehicles were partly neutralised by horse-archers, but a large measure of the credit for the Macedonian victory must go to the light infantry. The most spectacular use of *psiloi* against chariots was at Magnesia (70). Here *psiloi* and peltasts stopped a Seleucid chariot charge almost before it had started.

The same factors that gave *psiloi* an advantage over elephants also acted against chariots. Chariots relied on an a hard hitting charge; if they rode into *psiloi* they would be absorbed by the infantry's flexible formation and eventually they would run out of impetus. Once this happened the *psiloi* would shoot down horses and drivers. Chariots were even more vulnerable to this tactic than elephants due to the large numbers of horses needed to pull these vehicles and a general inablity in ancient times to protect horses effectively against missiles. Presumably one horse dead in the traces would stop a chariot as effectively as if all had been shot down.

Our records show no instance when a chariot attack succeeded in the Hellenistic period, often due to the actions of *psiloi.* None of the sub-types of *psiloi* were preferred for anti-chariot operations. The inherent abilities - dispersed formations, fleetness of foot and missiles - of *psiloi* gave them all marked advantages over the chariot.

(d) *Psiloi* and Cavalry

The sources for the Hellenistic period often record *psiloi* used in close conjunction with cavalry (71). This co-operation falls into two broad

categories; strategic and tactical. We shall deal with each in turn.

It has already been demonstrated that *psiloi* and cavalry were often grouped together in task forces or "flying columns" and the motives and advantages of this were discussed in part (see above p.196). In this section we shall see that this peculiar mix may have been in anticipation of the development of a tactical situation. The lengths to which commanders went in seeking to maintain a mix of cavalry and *psiloi* in strategic movements are noteworthy, an example being the hot pursuit of Darius by Alexander where Macedonian *psiloi* were mounted on cavalry horses (72).

Cavalry and *psiloi* are also found in close co-operation in the tactical sphere. This tactical combination predated the Hellenistic period, evidence suggesting that Jason of Pherae used such tactics. Furthermore in the later Classical period, specialist cavalry trained to fight in close co-operation with *psiloi* called *hamhippoi* were used by the Boeotian army. Some scholars have argued that they formed Epaminondas' cavalry screen at Mantinea. *Hamhippoi* do not appear in sources for the Hellenistic period, but despite this it is clear these tactics pioneered in the later Classical period remained in use (73).

The first Hellenistic reference to close cavalry and *psiloi* co-operation comes from the battle of the Granicus. Arrian records that during the fighting on the Macedonian right the Persian cavalry were inconvenienced by *psiloi* who became intermingled with the cavalry. It is not clear who these *psiloi* were. Diodorus' account of the battle suggests that they were Persians who

accidentally became entangled in the *melee*, disrupting their own cavalry. Arrian, however, makes no such reference and as Diodorus' account is so at variance with the primary source it is possible to conclude that these were Macedonian *psiloi* deliberately fighting alongside their own horse (74).

Another example of such close co-operation comes from Arrian's account of the crossing of the Oxus River (75). Skythian horse-archers had formed up on the northern bank of the river, threatening to attack the Macedonian army piecemeal as it disembarked from boats on the northern bank of the Oxus. Alexander sent across a contingent of cavalry first, the Skythians closed in on this force and began to shoot the cavalry down. The Skythians were careful to wheel and retreat to keep their distance from the Macedonians and nothing could be done to counter these tactics until a body of *psiloi* crossed. Arrian records that the Skythians were unable to shoot with impunity once the cavalry and *psiloi* were mixed. It is clear from his account that the *psiloi* concerned were in part archers and slingers, allowing the Macedonians to trade blow for blow with the horse-archers.

The co-operation of cavalry and *psiloi* has already been discussed in part with regard to the battle of the Hydaspes. On this occasion Tauron's archers worked in conjunction with allied horse-archers, the combined speed and firepower of this force serving to defeat the Indian chariots, commanded by Porus' son, with relative ease (76).

For our next reference we have to move to the Second Macedonian War and an encounter between two forces, Roman and Macedonian, of mixed

*psiloi* and cavalry (77). Livy records that the Macedonians were initially confident, anticipating success using their standard tactics, but were defeated by the Romans. Livy also records a similar skirmish in more detail. Philip V had sent out a force of 300 Cretans and 400 Trallians, respectively probably archers and slingers, with an equal force of cavalry. They encountered and fought a similar Roman force, of cavalry and *velites* (who were generally equipped as *akontistai*). Livy records that the Macedonians expected the fighting to follow its usual course, cavalry alternately charging and retiring, Cretans showering the enemy with arrows and the "swift Illyrians" (presumably *akontistai*) occasionally darting out to attack. Livy probably derives his account from Polybios and may be referring to a standard Macedonian battle-drill. As it was the Romans launched a furious assault, closing to hand-to-hand combat as fast as possible shooting with javelins as they went. Once in combat the Roman cavalry either dismounted to fight or mingled with their *velites*. The Romans had developed combined cavalry/ *psiloi* tactics in the Hannibalic War and in this instance tactics based on vigorous attack rather than manoeuvre and shooting carried the day (78).

Cynoscephalae was perhaps the largest example of combined cavalry and *psiloi* operations, and was initially fought between mixed forces of both sides (79). Little of interest can be gleaned from this action for our survey, save that the fighting was frontal with no manoeuvre and that it escalated from what had been a skirmish between advance forces. Cynoscephalae does, however, demonstrates how the fate of what had been auxiliary arms in the

Classical period were of the greatest importance to a Hellenistic commander.

Philip's son, Perseus, also used mixed *psiloi*cavalry units in the Third Macedonian War. Some were native Macedonian troops, others were mercenaries hired from the peoples to the west and north of the Macedonian kingdom. Notably Perseus used the Odryssians of Cotys, a force of 2,000 men, infantry and cavalry trained to fight in close co-operation with each other. He foolishly sent these men away without fully paying them after early successes in the campaign. Similarly he rejected the offer of Genthes, king of the Bastarnae, to supply 20,000 such soldiers (80).

The most detailed example of *psiloi* acting in concert with cavalry in the subsequent campaign is Livy's account of the fighting at Callinicus hill during the Third Macedonian War (81). The wings of the Macedonian army were composed entirely of mixed cavalry and *psiloi* formations, of especial note being the Odrysians of Cotys, 1,000 cavalry with 1,000 infantry trained to fight alongside them. The deployment of the Macedonian centre is less clear; Livy records that mixed units of *auxilia* and the Macedonian royal cavalry held this sector of the line. Either they were also intermixed, or perhaps more probably the royal cavalry were held back as a reserve. The Romans were in similar, mixed formations. Both armies also deployed a screen to cover the main forces; Eumenes' Cyrtii, probably slingers, and Gallic cavalry for Rome; *akontistai* and slingers for Macedon. Despite Livy's detailed account of the dispositions of both armies, he falls into generalities once the action begins. It appears that the battle was bloody hand-to-hand

combat rather than the running fight normally described as the common tactics of Macedonian *psiloi*cavalry formations. It may be the case that between Aoos and Callinicus the Macedonians had adopted a more aggressive form of combat in response to Roman tactics. It is noteworthy that they won Callinicus by these 'Roman' tactics. Furthermore later in the campaign, a Roman column was thrown into panic by the appearance of a mixed Macedonian force, attesting perhaps to a renewal of the prestige of such troops after their failures in the Second Macedonian War (82).

These examples illustrate specific aspects of integrated *psiloi*cavalry operations. It must be noted that the sources commonly link *psiloi* and cavalry. Some of these are coincidental, for example those that refer to advance guard or scouting units. It can, however, be inferred from the large body of evidence that there was widespread use of *psiloi* and cavalry in close tactical co-operation throughout the Hellenistic period. We must also be aware that several non-Hellenistic armies also used this tactic. We have already referred to the Roman use of cavalry with *velites*; also Germans used cavalry in concert with light infantry (83).

A question arises as to how this tactic came to be adopted by Hellenistic armies. Two main strands can be identified. Firstly, the peoples of the Steppes and the Balkans had a great influence on the military systems of the Macedonian state. We have already seen how Macedonian infantry were the product of a Balkan tradition, fighting as peltasts; it must also be noted that equestrian contacts must have existed with the north, for example Philip II

imported Skythian horses (84). It is logical that any advantageous light infantry-cavalry combination would have originated on the Steppes where mounted warfare was the order of the day.

Secondly, we must look to the *hamhippoi* of the Theban army for influences on Philip II's Macedonian army (85). It is widely acknowledged that Philip learnt something of Theban military science whilst a hostage in that city. This work has rejected the thesis that he copied the deep phalanx of the Thebans to produce the *sarisa*-armed formation of the Hellensitic period. It is not unreasonable, however, to suggest that the light infantry-cavalry tactical concept was brought north. Indeed Philip may have simply seen a regulated form of a tactic that was already within the military tradition of his country. He would have learnt of the use of the tactic with regular infantry lines, something that did not exist in the Balkans or the Steppes at the time. In short he would have had experience of the tactic in use within an overall tactical framework that was very close to the combined arms techniques of his 'first' Hellenistic army.

Clearly, then, a logical route of development exists for this tactic, but was it used in all Hellenistic armies throughout the period? Aside from the numerous passing remarks referred to above, most of our evidence has originated from conflicts in Macedon and Greece. Certain references do exist in eastern warfare that might be taken to imply the integration of cavalry and *psiloi*, an example being the battle of the Arius river (86). Polybios' account implies a close relationship on a unit level, i.e. *oulamoi* and *semeiai*, between

the cavalry and the peltasts and *psiloi*. But this is not the close intermingling of the two troop-types that we have encountered so far in our survey. It may be the case, therefore, that the tactic was unsuited to battlefields in the eastern part of the Hellenistic world, a point we shall discuss in greater detail below.

The method by which *psiloi* intermingled with cavalry is not made clear by the historical accounts of actual combat. It may be that the foot pushed into a *mêlèe* as and when they could, in a haphazard fashion. There is, however, a drill described in the tacticians that would allow *psiloi* and cavalry to mix in a regulated fashion, *parentaxis* or *parembole* (87). This drill allowed *psiloi* to be placed in the intervals between ranks or files in the phalanx. It is possible that the same idea could have been applied to cavalry formations, which were far more dispersed than those of the phalanx. Another alternative is the insertion of *psiloi* into the gaps between cavalry sub-units. This would have been more orderly and would have allowed a formation to manoeuvre more efficiently. The lowest units of organisation used by Hellenistic armies were small and this alternative would have resulted in close co-operation, without the potential confusion that actual intermingling would produce. Our analysis of which of these methods was used is dependent on an evaluation of the advantages that coordinated *psiloi* and cavalry on the battlefield would have produced.

The use of two combat arms working in close co-operation is part of the overall doctrine of combined arms that pervades all levels of the Hellenistic

military system. Commanders of the period understood that an army had to function as a whole, the strengths of each combat arm could be enhanced and its weaknesses reduced by interaction with another arm. Firstly, the tactic gave defensive advantages. *Psiloi* were vulnerable to cavalry (see above p.198) and close cavalry support would have helped neutralise this weakness. Hellenistic cavalry also had shortcomings, especially with regard to missiles, with which few of them were equipped. *Psiloi* would obviously lend their fire in support of their mounted comrades, as the action on the Oxus against the Skythians demonstrates. Secondly, the tactic was offensive - once again *psiloi* could support a cavalry attack with missiles. *Psiloi* could also engage in close combat in support of cavalry once a charge had contacted an enemy and a standing *mêlée* had developed, as for example, at the Granicus. In such cases the *psiloi* would have intermingled with the horse. Xenophon tells us that the cavalry soldier needed a helmet that afforded good all round vision, and he recommended the Boeotian style (88). The fighting at the Granicus shows us why Xenephon offered this advice and how attached *psiloi* could have caused havoc in the enemy's ranks (89). The *mêlée* was confused, with friend and foe alike intermixed: Alexander nearly lost his life several times from enemy attacking him from outside his vision. Add to this scene *psiloi* crouching low against the ground: these men would be below the vision of a mounted soldier, who would have been concentrating on enemy cavalry around him. They could easily tumble men from their mounts, hamstring horses, etc. The advantages of being on foot are further enhanced by the difficulty a soldier without stirrups would have reaching an infantryman with

a sword or lance, at the same time defending himself from enemy cavalry.

Several points can be drawn from the evidence. *Psiloi*-cavalry co-operation took two main forms in the Hellenistic period. Firstly, mixing together small sub-units of the two troop types to provide mutual support. Secondly, the actual intermingling of infantry and cavalry in *mêlée*. The former would be more common since the latter really needed a static cavalry action, a rare occurrence in the warfare of the period. Further, this intermingling was probably rarer in the east, where mounted warfare was more open and prone to rapid, sweeping charges. A third general point is that at some point in the period the mutual support tactics changed from small units manoeuvring at speed supported by missiles, to rapid aggressive attacks. It has been noted that this may have been the result of Macedonian troops facing Romans who used their own form of *psiloi* cavalry combined tactics. We cannot tell how far east this got before the period came to a close. Finally, it can be safely assumed that this tactic was commonplace and utilised as and when it would give tactical advantage. Once again this mitigated against widespread use of the tactic in the east where large numbers of horse were common and room for small unit tactics involving infantry were rare. Overall, however, this aspect of light infantry warfare is part of the wider combined-arms concept that is commonplace in warfare in this period.

e) *Psiloi* used as Rough Terrain Soldiers.

Operations in difficult terrain were ideally suited to the light equipment

and dispersed fighting order of *psiloi*, and this was as much the case in the Classical as in the Hellenistic period In such terrain other types of soldier were at a grave disadvantage, becoming disordered, being unable to use their weapons, etc. In the Hellenistic period a major function of the *psiloi* was to take and hold difficult terrain.

*Psiloi* played a critical role in battles where rough terrain appeared; examples of this are, however, uncommon. Commanders in this period tended to seek battle on large flat areas of ground in order to facilitate phalanx and cavalry operations. Where poor terrain does appear in the sources it is, therefore, often around the edge of a chosen battle arena. *Psiloi* would be stationed in such rough terrain to attempt and prevent enveloping manoeuvres. An example of the defensive motive is Issus, where Alexander deployed *psiloi* to cover his right wing which rested on steep hills upon which were deployed Persian troops (90). The offensive motive is illustrated by Pydna where Plutarch records that Perseus chose the ground partly because the hills around the field would allow *psiloi* to surround the enemy (91).

Difficult terrain that actually formed part of the battle- front proper was more of a problem as it disrupted a formed battleline. At Asculum Pyrrhus deployed *psiloi* to hold such ground (92). At Sellasia Cleomenes went further. He attempted to infiltrate *psiloi* through the enemy centre along the line of the river Oenus, and it was only a charge by Philopoemen and the Achaean horse that foiled this plan (93). A variation was to use rough terrain

as a cover for ambush; Philip V used this to effect in the fighting around Lissus (94). Rough terrain created a hole in the line of battle through which enemy *psiloi* could infiltrate, creating a defensive-offensive problem ideally suited to armies with high-quality light infantry. This point is critical given the importance to a Hellenistic army, especially its phalanx, of maintaining a cohesive front and preventing enemy outflanking manoeuvres.

The role of *psiloi* as a screen for marching columns has already been discussed. All that need be added here is that when Hellenistic armies were moving through rough terrain, this mission became even more important.

Hellenistic armies deployed forces consisting entirely of *psiloi* in areas where difficult terrain predominated. Alexander's campaign into the Cilician mountains was conducted by *akontistai* and archers alone, as was the fighting in Aetolia against Brennus' Gauls. Philip V inflicted heavy casualties on the Dardanians, who lacking either *psiloi* or cavalry, had no reply to Philip's harassing tactics. Perhaps the best documented example of *psiloi* successfully operating alone is Manlius' campaign in Anatolia against the Galatians (95). Quite simply an army without proper support troops courted disaster if it ventured into close terrain. This had, of course, always been the case, but in the Hellenistic period the theatre of operations was much larger, and thus difficult terrain a more common feature of campaigning. *Psiloi* were less a luxury, more a vital component of an army.

Often *psiloi* had to occupy difficult terrain for their own safety. We see this during the campaign which culminated in the battle of Caphyae (96). An

Aetolian raiding force was contacted in the region of Caphyae by a superior Achaean army under Aratus. Polybios records how the Aetolians, cavalry and *psiloi*, made for the safety of a line of hills and he criticises Aratus for halting to deploy his troops rather than attacking the Aetolians in the open. Another example of *psiloi* operating in rough terrain for their own well-being comes from the battle of Megalopolis (97).

As *psiloi* were equipped with missile weapons, they could reach out from positions of safety to harass enemy troops. *Psiloi* were used in this way in the fighting in both the Aoos and Thermopylae passes (98). On both occasions *psiloi* were deployed in the hills to the sides of the passes to harass the flanks of advancing enemy troops and on both occasions the Romans advancing through the narrows did not have enough light infantry to clear the foot hills. Curtius records how a Hellenistic army could counter such a tactic when, during Alexander's attack on the Cilician Gates, light armed Thracians were sent forward supported by archers occupying elevated terrain (99).

The equipment and tactics used by *psiloi* made them ideal troops for rough terrain missions. Other types of soldiers often helped, especially peltasts, but *psiloi* always formed at least part of assault forces used to capture broken ground. The methods used by *psiloi*, and any other attached troops, can be illustrated by a series of examples.

*Psiloi* used missiles to aid their attacks, either forcing enemy troops out of defended positions with fire alone or laying down supporting fire for an assault by heavier troops. An example comes from the fighting at Termessus,

called Telmissus in error by Arrian. A mixed force of archers, *akontistai* and more mobile hoplites - presumably a picked force - were used to capture Termessus during Alexander's campaign in Asia Minor. The *psiloi* forced the defence back from a very strong position with a storm of missiles. The Macedonians then occupied the positions of the defenders as they fell back. This manoeuvre eventually led to the fall of the town (100). Missiles were also used to force the Aspassi from prepared positions during Alexander's attack on their town (101). It may have been with this technique that Alexander cleared the many mountain passes that faced his army during his wars.

During Philip V's advance through the narrows of Thalmae, *psiloi* and peltasts were sent ahead to clear the way. Philip considered this task so important that he personally commanded the attack (102). Polybios' account of the fighting is not detailed, but it is possible that the missiles of the *psiloi* were used to support an assault by the peltasts.

Hellenistic commanders often used *psiloi* as part of a complex multi-arm formation to storm defended rough ground. An example comes from Philip V's campaign in the Eurotas valley in 218 B.C. The Spartans chose to contest a hill called The Menelaion which blocked the Macedonian advance on their city. It was rocky and difficult to climb, and the approach was blocked by the river Eurotas. Philip V personally led a force of mercenaries (probably *psiloi*), peltasts and Illyrians across the river and against the hill. The mercenaries engaged the enemy first, but became bogged down trying to

assault the objective. Polybios specifies that the Spartans had the better position and adds that they also had heavier equipment. The mercenaries, however, remained in combat until the peltasts came up in support and the Illyrians could outflank the defenders. How the mercenaries fought we are not told; either they simply skirmished or they actually crossed weapons with the Spartans. Either way, their actions were enough to pin the Spartans in place and allow then to be out-manoeuvred (103).

Polybios records two attacks on defended rough terrain by multi-arm forces in great detail. Firstly, the storming of the Porphyrion Pass in the Seleucid campaign in Coele-Syria of 218 B.C. (104). A Ptolemaic force commanded by Nicolaus held the pass and had strengthened their position, throwing up fortifications. Antiochus advanced a force of *psiloi* under Theodotus the Aetolian to scout the area. Evaluating the strength of the position he detached his heavy troops and advanced on the pass with a mixed force in three divisions. Each division had a specific mission. The first, under Theodotus, was to attack and force the enemy line at the foot of Mount Libanus. The second, under Menedemus, was to attempt a passage of the spur that lay along the central axis of the pass. The third, under Diocles, was to attack along the seashore and, at best, outflank the Ptolemaic position, at worst divert attention away from the other sectors. Antiochus and his bodyguard took up a central, reserve position. Polybios does not give a break-down of the composition of the forces, so we can only assume they were mixed formations, possibly different types of *psiloi* and peltasts -

perhaps, as Polybios refers to Antiochus' bodyguard, even cavalry.

The Seleucid assault was taken up all along the line, Theodotus' men being the most successful, capturing Mount Libanus and swinging in to outflank the Ptolemaic position. Bar-Kochva attributes a pinning role to the other two forces, but it seems more probable that the attack was designed to probe the entire Egyptian front for weakness, with three different plans enacted simultaneously, the intention being to overload the defence until one attack was successful. It only needed one to be successful, since fear of envelopment would have then forced Nicolaus to quit his position. The stationing of a reserve under the king's personal control, in order to take immediate advantage of any wavering in the enemy line, suggests such a plan was the more probable.

Polybios' second detailed account of a pass clearance comes with the Seleucid crossing of the Elburz range in 210 B.C. (105). Again a mountain range blocked the advance of Antiochus III's army, and on this occasion, too, the assault force was split into three divisions: the first, under Diogenes, consisting of archers, slingers and mountaineers skilled in rock throwing; the second, under Polyxenidas of Rhodes, with 2,000 Cretans, archers who were equipped with shields; and finally there was a force of *thureophoroi* and *thorakitai* (troops discussed above pp.163ff.) under Nicolaus the Aetolian and Nicomedes of Cos.

The road across the mountains followed a broken river bed. The defenders had added to the natural strength of the pass by building an abatis;

they also rolled rocks down on the Seleucids as they advanced. Polybios' account details one attack made by the specially picked Seleucid troops.

Diogenes' men may have held the van because they were the first to encounter the enemy, who were lodged behind an obstacle. He manoeuvred his command to one side onto higher ground and proceeded to shower the enemy with missiles. The defenders retreated, allowing engineers to advance and remove the abatis. Diogenes' men then held to the higher ground and advanced in dispersed formation to search for and occupy favourable positions, from which they could shoot at the enemy. The Cretans then advanced, parallel to Diogenes' command, slowly and in good order, providing further support. Nothing is said of the *thureophoroi* or *thorakitai*. We have already concluded that these were the intermediate type of Hellensistic peltast and perhaps it was intended that they fought in close combat those defenders who could not be dislodged by missiles.

Clearly weight of fire forced the enemy back from their positions in this example. One can presume that the Seleucid troops repeated Diogenes' manoeuvre as many times as it was necessary to reach the summit of the pass, the entire process taking eight days. Only there did the enemy make a stand and fight a set-piece battle, and even then *psiloi* contributed to Antiochus' victory, outflanking the enemy position during the night.

The positioning of the *psiloi* divisions in this example is of interest. Bar-Kochva believed the role of the Cretans was to act as bait, but this analysis is not convincing. The Cretans were noted archers in the ancient

world and very valuable, so it would have been more logical to use more expendable troops for such a dangerous operation. Rather, Antiochus intended to pressure the enemy from two directions to prevent any manoeuvre aimed at chasing away the Seleucid *psiloi*. The enemy could not attack either force without exposing an open flank. The Cretans were equipped with shields, and one presumes they could have engaged in hand-to-hand combat had a favourable situation presented itself. Furthermore, the cross-fire created would have served better to disconcert the defence. Finally, the holding of elevated ground would have reduced the effect of any cover. Overall the crossing of the Elburz can be marked out as a classic *psiloi* operation using position and fire-power to achieve an objective.

The tactics and equipment of *psiloi* were therefore ideally suited to fighting in difficult terrain. *Psiloi* became an army's cutting-edge when Hellenistic armies encountered rough ground in strategic or tactical situations. Armies who fought without *psiloi* as part of their order-of-battle were, therefore, courting problems in the maintainance of an offensive. The nature of war in the Hellenistic period made this far more telling than it had been in Classical warfare. Hellenistic armies ranged over a much larger area of the world; they faced poor terrain as a regular part of their warfare. On the battlefield Classical commanders had been content to select ground suited to a hoplite battle rather than to take advantage of rough terrain to gain tactical advantage. The use of *psiloi* in rough terrain was not fundamentally different from the Classical to the Hellenistic periods; rather the opportunities for

using *psiloi* increased, the tactical gambits used expanded and *psiloi* took on a more important role in warfare at all levels, simply because of their ability to operate where other troops could not.

F) *Psiloi* Organisation and Drill

The tacticians record details of *psiloi* organisation and as in their writings on the phalanx, this organisation is 'square' and highly stylised (106). The organisational structures laid out in the tacticians must be used with care when applied to *psiloi* formations. Those *psiloi* who were irregular troops probably did not fight in regular-sized units and the evidence of the tacticians can only be applied to those light infantry who were under the influence of Macedonian military systems and philosophy. Even so, only the lower levels of the tacticians 'square' system were probably used, the larger formations being either hypothetical or having an administrative, rather than a tactical, function.

The smallest unit of *psiloi* in the tacticians' organisational system was, as with the phalanx, the *lochos* or file. This unit was eight men strong, indicating that the tacticians expected *psiloi* to operate in formations eight deep. Four *lochoi* made a *syntaxis*; from this point on sub-units were combined in twos to create new units within the structure, a 'square' organisation. The first level at which special supernumerary troops were added was the *hekatontarchia*, a formation of one hundred and twenty-eight men. The addition of the supernumeraries indicates that the tacticians believed this formation was the basic tactical sub-unit for use on the

battlefield. Until this point their organisational system would only have been used to carry out drill evolutions. The supernumeraries must have been added to translate orders from the overall army command-structure into action.

From the *hekatontarchia* the system progressively 'squared' until the largest unit, the phalanx, of eight thousand, one hundred and ninety-two men, was reached. If the phalanx was designated an *epitagma*, a supporting force, then eight additional supernumeraries were added, four of them being generals. We have already encountered historical references to forces of *psiloi* that might be called *epitagma*, i.e. large forces of *psiloi* with special, independent missions. Therefore, the higher levels of the tacticians' organisation may have been used in the field on special occasions, although we can presume that the specific numbers recorded would have rarely featured. What is important is the concept that a large force of *psiloi* could be massed under independent command, with its own internal structure for special missions.

References to specific *psiloi* sub-units are rare in the historical sources. Arrian mentions the *taxis* and *chilarchy* as units used by *psiloi* (107), Livy maniples of *levis armaturae* and *cohortes* of Thracians and Cretans (108). Ptolemaic papyrii do not refer to *psiloi* sub-units, which is understandable since *cleruchs* were either cavalry or phalanx soldiers. Aside from this the only extant evidence that might be of use are specific references to the numbers of soldiers in *psiloi* contingents, some of which bear close resemblance to the numbers recorded by the tacticians. This evidence is,

however, haphazard in its nature and difficult to use as proof of a system of *psiloi* organisation in use in the Hellenistic period.

It may be argued that some kind of formal organisation would have aided *psiloi* operations, and indeed that regular *psiloi*, such as Alexander's famous Agrianians, would have had significant tactical advantage over irregular *psiloi*. As we have seen, *psiloi* operations involved rapid movement, forwards and backwards, on the battlefield. It is not an easy task for large numbers of soldiers to move rapidly without becoming disordered. A system of organisation, and the subsequent chain of command, would have greatly facilitated smooth *psiloi* operations. An example of this would have been evasion of an enemy attack. Evasion by sub-unit under the command of officers would have prevented a tactical withdrawal becoming a rout. Furthermore sub-units would have to return to the fray after such an evasion if constant missile pressure was to be kept up on the enemy line. Once again the use of a proper chain of command would have been of advantage. Shooting may also have been more effective if directed by officers commanding sub-units, rather than by individual soldiers. For example, a *hekatontarchia* might lay down a barrage of missiles on a specific part of the enemy line, rather than individuals dissipating fire.

To conclude, the tacticians are the only major body of evidence which indicates that *psiloi* were properly organised, and only fragmentary historical evidence supports their writings. The advantages that organisation would have given *psiloi*, however, make it possible that the evidence of the

tacticians is, indeed, correct and it is logical that regular bodies of Hellenistic *psiloi* employed some form of organisation.

The tacticians also record a number of standard drills for *psiloi*. Firstly 'insertion', which has already been discussed in the context of the phalanx (109). *Psiloi* used this drill in two forms, either inserting themselves into formations of other troop- types or into other units of *psiloi*. The insertion of *psiloi* into formations of other troop types has already been considered and there is no evidence that *psiloi* operated from within the phalanx in the Hellenistic period, although the technique may have been used to allow *psiloi* to fall back through the phalanx. The use of *psiloi* with cavalry, however, has been shown to have been a common tactic of the period, and insertion may have been used to intermingle units of *psiloi* and cavalry. It is not clear what the tacticians mean when they refer to insertion to intermix two units of *psiloi*. They may record a drill to intermix two types of *psiloi*, for example *akontistai* mixing with a body of archers, but it is more probable that they refer to a drill similar to the countermarch of the phalanx to make a formation of *psiloi* denser. Polybios' account of the Elburz crossing supports this hypothesis since he records that *psiloi* made their formations denser upon capturing a position. As long as *psiloi* did not anticipate attack, to evade which they needed a loose formation, a drill to make their formation denser would make shooting more effective since more men would shoot per metre of ground (110).

The tacticians also note that regular drills were used to enable *psiloi* to

take-up their battle positions, in the van, and to flanks and rear (111). This may also refer to *psiloi* moving through formed, friendly bodies, for example a screen of *psiloi* moving from front to rear of a phalanx. Movement to the flanks of formed troops would also have been a major task as the distances involved would have made the possibility of a screen being caught in front of its phalanx by a swift enemy attack very real. The tacticians do note in detail how these movements should take place, and it is noteworthy that they saw such manoeuvres as important. Clearly they would have been a common feature of Hellenistic warfare.

The tacticians do not examine *psiloi* operations in the same detail as those of the phalanx. This may simply have been due to the high degree of organisation needed for successful operation of the phalanx as opposed to the more free-form fighting conducted by *psiloi*. The lack of attention paid to the *psiloi* by these 'armchair' generals might tempt us to dismiss their evidence for *psiloi* operations. This would be a mistake, however, despite lack of substantial information of the tactical writings from historical sources. Much of what the tacticians say about *psiloi* operations is logical; *psiloi* operations would have needed some organisation and drill - though not on the same scale as the phalanx - for this type of soldier to have been as successful as he obviously was in the Hellenistic period.

G) Conclusions

The implications of this survey of *psiloi* operations in the Hellenistic period are numerous and most are contained in the relevant sections above.

We shall here, therefore, confine comments to the overall objective of illustrating interarm co- operation and the all-arms concept that pervaded Hellenistic warfare.

The most fundamental conclusion that can be drawn is that *psiloi* were more widely used in the Hellenistic period than they had been in earlier Greek warfare and, furthermore, that the responsibilities of *psiloi* in strategic operations multiplied, especially in eastern theatres. *Psiloi* were a vital part of the Hellenistic commander's repertoire, and armies who fought without *psiloi* as part of their make up invited disaster. This was a result of an advance in the complexity of war and the wider ranging campaigns fought by armies in this period.

A second general conclusion is that *psiloi* were frequently used in conjunction with other types of Hellenistic soldiers. This was especially the case with troops such as cavalry and elephants, but *psiloi* could supplement the fighting abilities of all parts of the Hellenistic military system. This was due to two reasons. Firstly, *psiloi* were a fragile weapon and needed the protection of the more aggressive combat arms. Secondly, they were equipped with missiles that could reach out and damage an enemy, whereas most other troops could influence the battle by close action. The result was that armies that did not embrace the use of *psiloi* in mixed formations could be shot down without reply. It is also clear that this use of *psiloi* was extremely subtle, allowing for complex combinations to achieve specific tactical objectives.

Psiloi came in many forms, but three main types existed, categorised by the missile weapons they carried, javelins, slings and bows. This sub-division was, however, complicated by the addition of hand-to-hand weapons, shields and other items of equipment. Once one takes into account the various mixtures of *psiloi* that were used, the complexity and versatility of this combat arm is appreciated. A commander could mix different types of *psiloi* to conduct specific tasks and to enhance the fighting strengths of his formations. We have seen how different forms of *psiloi* were used to link two types of missilemen; for example slingers were mixed with bowmen, or bowmen with *akontistai,* to neutralise enemy strengths and adapt weapon-mixes to varying tactical situations. It is clear from our evidence that *psiloi* took easily to such tactical interaction and that their fighting tactics were very flexible in this respect.

The weapons used by *psiloi* were paradoxically very ineffective as killers on the Hellenistic battlefield. This does not, however, detract from their importance in the tactical system of the period. No ancient weapons were devastating in the initial stages of battle. Heavy casualties were only caused in ancient warfare during the pursuit of a routed army which had lost its cohesion and ability to resist effectively. In most battles the casualties inflicted on a winning force were negligible when compared to those of the vanquished. Thus, the impact of missiles on combat needs to be kept in perspective. It is clear from the sources that shooting could turn a situation, hence the mixing of *psiloi* with other combat arms, and that *psiloi* could

overwhelm enemy positions, especially in difficult terrain, with the aid of shooting. Shooting, therefore, may have been ineffective when compared with the fire of, say, black powder warfare, but in the context of the Hellenistic period it contributed a substantial amount to victory, especially in strategic operations.

*Psiloi* were essentially troops who fought as part of, or contributed to the success of, the fluid manoeuvre tactics of the period. This was despite a development in *psiloi* tactics in Greece in the later part of the Hellenistic period, when the use of more aggressive tactics became more common. This may have been the result of encounters with Roman *velites*, who appear to have been more prepared to engage in hand-to-hand combat than Hellenistic *psiloi*. For most of the period, however, *psiloi* operations at close-quarters are rare and normally the result of atypical tactical situations. For example, Alexander's *psiloi* fought in the cavalry *mêlée* at the Granicus because of the difficulty of dislodging the Persians from their strong defensive position on the opposite river bank. Most *psiloi* operations in the Hellenistic period, even when combined with other troops, were related to manoeuvre. Aside from phalanx warfare, Hellenistic tactics emphasised fast moving combat, with rapid shifts in attack axes. This was especially the case with cavalry warfare. Since *psiloi* were commonly deployed in conjunction with other arms, especially horse, they participated fully in this war of manoeuvre. Indeed the light equipment and flexible fighting methods of the *psiloi* made them ideally suited to such situations.

*Psiloi* could not, and did not, win battles alone in the final analysis, Hellenistic battles could only be won by breaking the opposing phalanx and unless generals were extremely skilful, or lucky, this objective could only be achieved by hand-to-hand combat with another phalanx. Battle, however, is only the culmination of a process largely dominated by strategic operations, and in this wider strategic sphere *psiloi* had a vital role to play. As strategic operations directly influence the outcome of battles, the activities of *psiloi* were vital to the final decisive clash of arms. In the strategic field they were the only troops who could defend or attack the numerous natural obstacles that were features of campaigns in this period. They were ideally equipped for raiding, which was also a common feature of the 'total war' practised by Hellenistic states. Tactically the great asset possessed by *psiloi* was the ability to enhance the tactical effectiveness of other combat arms. *Psiloi* could be the extra weight that tipped the balance in a situation that would otherwise rely on luck. The flexibility of *psiloi* tactics and weaponry, and their ability to enhance the effectiveness of other combat-arms made them an invaluble part of the Hellenistic military system. All Hellenistic armies deployed *psiloi* and often entire campaigns rested on the success of their operations.

## Chapter IV - The Cavalry

### A) Introduction

Cavalry performed an important role in Hellenistic warfare. On campaign they scouted and raided, tasks that have been the responsibility of cavalry since man first used the horse in war. Tactically Hellenistic cavalry was of great importance. The armies of the period deployed large numbers of cavalry whose role was to break through the enemy line of battle by a series of massed charges. This tactic was very successful, but only because the Hellenistic military system gave its cavalry arm the support of a strong infantry base, the phalanx, and the support of light troops in areas inaccessible to horsed soldiers. Thus, this combat arm cannot be viewed in isolation. The period was not, as Tarn said, essentially an age of cavalry: it was an age of all arms co-operation (1).

Cavalry had also been a feature of war in the Classical period. For economic reasons only the richest members of the southern city-states could afford to fight as mounted soldiers, and, as a result, the cavalry forces of these cities were numerically small. Furthermore, the dominance of hoplite tactics on the battlefield relegated cavalry from a tactical to a secondary, strategic role. On the battlefield Classical cavalry were little more than skirmishers; they only fought other cavalry and found it impossible to attack the phalanx (2). There was, therefore, a marked difference between the essentially light cavalry of the Classical period and the heavy, shock cavalry

of the Hellenistic.

The development of cavalry into a shock force in the Hellenistic period was the result of several factors. Firstly, the kingdom of Macedon already possessed an effective cavalry arm when Philip II came to the throne in 359 B.C. Philip's aristocracy were horse owners on a large scale and traditionally fought from horseback. Secondly, Macedonian cavalry were, from Philip's time onwards, equipped for hand-to-hand combat and operated as charging cavalry of the battlefield. Thirdly, the Macedonians used new small unit tactics to increase the effectiveness of their mounted arm. All of these factors continued into the Helenistic period proper and were expanded upon. Of special note is the cavalry of the Seleucid state, which took the Hellenistic cavalry concept further by creating heavily armoured formations of horse and utilising the cavalry tradition of the Iranian highlands (3). Hellenistic cavalry fell into two general types, those that fought at close quarters and those who shot from a distance with missiles. Both will be dealt with in the same chapter in order to maintain consistency. Once again evidence falls into two areas, theoretical references and accounts of cavalry in action. The equipment and tactics of Hellenistic cavalry will be surveyed and analysed in an attempt to reconcile these two types of source. Finally, Hellenistic cavalry warfare will be placed in context with the other arms of the military system of the time.

B) <u>Cavalry in the Classical Period</u>

The Classical Greeks used cavalry on a small scale to conduct various strategic operations. Cavalry in this period raided enemy land and limited the damage of such action on home territory. They formed up on the flanks of the army in battle to harry any outflanking moves and to hinder pursuit should the hoplites be defeated. Lacking in technique and numbers, cavalry had little effect on war in the early part of the Classical period (4).

To some extent the Peloponnesian War caused cavalry to take on a greater role in war. This was caused by the prolonged nature of the conflict and the large area over which it was fought. Many states developed almost professional units of cavalry, Athens being a notable example; she maintained a force of 1,000 horse drawn from the upper classes of Athenian society. This trend had progressed to such an extent by the mid-fourth century that Xenophon, who was by Greek standards an expert on mounted warfare, praised the effectiveness of contemporary cavalrymen (5). Despite these advances in technique and organisation, however, later Classical cavalry did not take on the battle winning role that it did under Philip, Alexander and their successors. To understand why we must examine the equipment and tactics of the time.

Cavalry in the Classical period were drawn from the richer sections of Greek society because of the cost of buying and maintaining a war horse, which was considerable given that southern Greece was far from being good horse country. The equipment of cavalry in this period reflected the high

status and wealth of this horse-owning class. Anderson reviewed the evidence and his conclusions show that the equipment of Classical horse only differed from that of the Hellenistic period in detail. Most Classical cavalrymen were armoured, wearing cuirasses similar to those worn by hoplites (6). The Greeks did use cavalry without armour, but Anderson argues that these troops would not have formed separate bodies as happened in the Hellenistic period, and that their existence is probably due to foreign influence, both on actual warfare and the artists who produced the ceramic evidence that supports unarmoured cavalry in this period (7).

It is generally held that Classical cavalry did not use shields. Written evidence for the period strongly suggests this to be the case; for example Xenophon's treatise on horsemanship does not mention shields. Some ceramic evidence shows cavalry with shields, but, this has been successfully dismissed as pictures of wealthy hoplites travelling to battle on horseback and dismounting to fight (8).

As for other protective equipment, Classical cavalrymen are shown wearing many types of helmet in art of the period. Xenophon recommended the Boeotian type to mounted soldiers of his day since it gave superior all-round vision (9). We cannot tell how far his advice was taken up. There is little evidence to support the use of greaves by Classical cavalry.

Offensive equipment consisted of sword, lance or javelin. Xenophon recommends the *machaira*, a heavy, curved sabre in preference to a straight sword (10). He also criticises the lance, advising cavalrymen to carry two

javelins, one for throwing, one for fighting at close quarters. It will be clear when tactics are examined that the majority of Classical must have been equipped with javelins rather than lances if they were to be effective (11).

The most important and expensive item of equipment used by cavalry was, of course, the horse. The horse, especially one trained for war and hence useless for agricultural work, was not a common animal in southern Greece. It is noteworthy that Xenophon's treatise places so much stress on the care of horses, because the breeds of southern Greece were generally held to be weaker than others. This would have placed cavalry mounted on such horses at a disadvantage in combat. The best horse country in ancient Greece was in the north, Thessaly and Macedonia. These areas had the plains necessary to breed good horses in large numbers. The horses, and hence the mounted arms, of these states were considered to be of higher quality. They failed, however, to make a proper impact on the military history of Classical Greece because of their lack of good infantry to match the hoplites of the south (12).

Cavalry tactics in the later Classical period - which are admirably described in Xenophon's two works on cavalry warfare - were the product of the deficiencies of the hoplite phalanx. Strategically they raided, scouted, etc. Tactically cavalry were generally skirmishers: they might be expected to engage enemy horse in hand-to-hand combat, but never the phalanx. It is clear from the sources that cavalry were not even employed to attack hoplites in the flank or at some other time of tactical disadvantge. On the Classical battlefield the hoplite reigned supreme, and horsemen had little to contribute

to victory. This was the case even with the higher quality cavalry employed by the northern Greek states (13).

Finally, some evidence indicates that the Boeotian army was beginning to use cavalry shock tactics at the close of the Classical period (14). The sources make confused references to the role of Theban cavalry by Pelopidas against Alexander of Pherae, and at Leuctra and Mantinea. Xenophon's account of Mantinea, in particular, gives a leading role to the Theban cavalry in the fighting on the left of their line. This evidence has been used to support a case for outflanking tactics involving hand-to-hand combat for Theban cavalry in this period. If such tactics were used they are obviously a precursor to Hellenistic fighting techniques. Our sources, however, are so confused that it is difficult to reach any satisfactory conclusion. The bulk of the evidence, some very detailed, demonstrates that cavalry were skirmishers and it would be logical to follow this course with later Theban horse. Their role may have been more aggressive in the actions cited, but it is more reasonable to assume that skirmish tactics were used to disrupt the enemy line, the innovation being that the Thebans fought in much closer co-operation with their infantry.

To summarise, Classical cavalry had an important strategic role in war, which increased during and after the Peloponnesian War. Even the best Greek cavalry of the period could not break a hoplite-phalanx frontally, nor was it the case that they sought to outflank the enemy line to gain a position of advantage whereby the defensive capabilities of the phalanx could be

negated. Classical cavalry were deployed in small numbers and were drawn from the richest sectors of society.

C) Cavalry Equipment in the Hellenistic Period

a) Regional Variations

In a geographic area as vast as that dominated by the Hellenistic monarchies, it was inevitable that cavalry tactics should be influenced by native traditions. In particular the fighting techniques of the peoples of central Asia, the Iranians, and the inhabitants of the Russian Steppes, led to developments in cavalry warfare in the east that were not repeated in the west. This was exacerbated by the differing military needs of the powers of Greece and Macedon and those who dominated the near east. It is difficult, therefore, to generalise about cavalry equipment in this period since regional variations always existed.

Another result of regional developments in equipment is the creation of ethnic troop types. Our sources refer to certain types of troops by ethnic titles. On some occasions, an ethnic title refered to a certain style of equipment and fighting, for example Tarentine. On others, no such reference is made and the title is simply military nomenclature denoting a specific unit of troops. An example of this are the various ethnic *hipparchies* of the Ptolemaic army, Galatian, Thracian, etc. These were simply the titles of units and they did not denote differing equipment or tactical styles. Ethnic cavalry titles and their relation to real styles of equipment and tactics is a major

source of problems when studying this subject (15).

In short regional variations in equipment divide Hellenistic cavalry into two main groups, western - i.e. Macedonian and Greek cavalry - and those used in the east. Eastern armies tended to deploy larger numbers of cavalry. They also introduced fully armoured cavalry, cataphracts, and horse-archers into their armies. All armies tended to use an unshielded heavy cavalry lancer as the mainstay of their mounted force, but western armies re-equipped with javelin and shield as the period progressed. This development does not appear to have influenced eastern cavalry.

b) The Intermediate Type of Cavalryman

The tacticians split cavalry into three types, armoured cavalry called cataphracts, light cavalry - *elaphroi* - and an intermediate type, variously called *xystophoroi, lonchophoroi* or *kontophoroi* (16). This section will discuss the intermediate type which, unlike its infantry equivalent, the peltast, appears to have been the most common cavalry type used in the period.

The tacticians refer to this type of cavalryman by the weapon carried, some type of spear. If a more precise definition is needed, the troopers were armoured, whereas their horses were not. They were equipped with a spear of some kind and a sword. They did not carry a shield for most of the period, although this item appears later in the western regions of the Hellenistic world. These cavalry charged in line or wedge to defeat the enemy in hand-to-hand combat. This definition is by its nature broad and some

variations existed, which will be identified as they arise. To understand tactics we need first to discuss equipment.

The tacticians give various titles for this cavalry type, all related to the type of spear carried. This causes a major problem as the Greeks were imprecise in their terminology for the word 'spear'. The Greeks used four words for spear, δόρυ, λόγχη; ξυστόνand κοντός in addition cavalry called *sarisaphoroi* are also recorded. Latin authors use one, *hasta*, a generic term for spear. Greek sources are not consistent in the use of these words and it is difficult to determine if they refer to specific types of spear, such as a lance as opposed to a throwing spear.

Δόρυ is the generic Greek word for spear. Technically it applied to the wooden shaft of the spear. The *doru* could be wielded on foot or from horseback. It could also be thrust or thrown; for example the tacticians say that Tarentine cavalry used the *doru* either way. The term had other uses; it was military parlance for the right side of a formation. It is very difficult to apply any significance to the word when it appears in the hands of cavalry in the Hellenistic period (17).

*Lonche* is another Greek word for a spear that has a specific technical meaning, this time referring to the head or point of the weapon. it is clear that the word was also used to denote a spear in general, for example when Demetrius warns his friend Mithridates by writing a message in the sand with his *lonche* having been sworn to silence by his father (18).

The term ξυστόν is exclusively applied to cavalry weapons in the

Hellenistic period. Once again it was a specific technical term, referring to the shaft of the weapon as opposed to the head. The battle of the Granicus river provides evidence for cavalry use of this weapon. Arrian records that Alexander used a *xyston*, although he uses the word *doru* earlier in his account - indicating the haphazard way in which even first class Greek military writers used technical military terms. Arrian is most useful when he compares the Macedonian *xysta* with the javelins of the Persians, which were thrown rather ineffectively at the oncoming Macedonian horse. Once in combat the cornel *xysta* were far better suited to hand-to-hand fighting than the Persian weapons. In this account the *xyston* is shown as a long cavalry thrusting spear (19).

The tacticans alone record the use of the κοντός; this was slang for a spear, derived from the Greek for a punting pole. *Kontos* does not appear in our historical sources and may refer to weaponry in use by the Roman army at the time Arrian was writing his technical manual. On other occasions he refers to units of *contarii* which were in use by the Romans in the second century A.D. It is noteworthy that Arrian included *kontos* as a word to give meaning to a contemporary readership for cavalry weaponry in the Hellenistic period. Our evidence shows that in the second century the *kontos* was a long cavalry lance (20).

Finally there are references to the *sarisa* being used from horseback by a unit in Alexander's army known as the *prodromoi* or *sarisaphoroi*. Some scholars have concluded that the *sarisa* was the typical Hellenistic cavalry

weapon, the cavalry version being shorter and lighter than that used by the infantry. Markle, however, took an extreme position and concluded that there was no difference between the infantry and cavalry version. He reconstructed a *sarisa*, based on a find from a cist at Vergina and the various references to the length of the *sarisa* in the sources, and demonstrated that this weapon could be used by a rider without a saddle or stirrups (21).

The written evidence is confused as to the precise nature of the spear used by the intermediate cavalry-type in the Hellenistic period. Some sources even on occasion record that cavalry spears were thrown (22). To gain a full picture of what cavalry used as their main offensive weapon in this period we have to turn to art representations to support the written sources.

The Alexander Mosaic is perhaps the best representation of Hellenistic cavalry in action (23). The mosaic shows Alexander and his Companions fighting around Darius' chariot at Issus. In the foreground is Alexander. He is mounted, equipped with *linothorax*, sword and lance, but he is not shown with a helmet. The lance is held underarm and parallel to the ground. As the mosaic is damaged we cannot determine the length of the spear with certainty, but if the spear is being held at its centre - shown by Markle to be the most logical way of using a lance due to weapon balance - then it could be up to twenty feet in length. A stele from Shiatby supports this general conclusion that Hellenistic cavalry spears were taller than a man, perhaps even longer (24). The Shiatby horseman once again holds his lance underarm, but at an angle. The copy of the Kinch tomb painting is another

example where a horseman uses a spear underarm to kill a Persian foot soldier; again the spear is very long (25).

The Alexander sarcophagus also indicates that Hellenistic cavalry used long spears (26). Two figures are of interest. One, an armoured horseman, uses a spear over arm; the other, commonly believed to be Alexander, attacks a Persian infantryman with an underarm thrust. The actual weapons are missing from the sculpture - scale replicas of the spears and other pieces of equipment would have been affixed to the sarcophagus in ancient times - so once again we cannot categorically come to a conclusion as to the length of the spears. Suffice it to say at this point that the scale distance between 'Alexander's' hand and his target, the stomach of a Persian infantryman, is approximately twelve feet. Other art evidence shows the Hellenistic cavalry spear used in an overarm position, for example the wall painting from Marissa and a figure on a dish from Trasilica in Calabria. On these examples the rider grasps the spear just behind the mid-point and thrusts down to kill game. With both examples the spears are substantial weapons (27).

Several numismatic examples also depict Macedonian horse (28). Of particular interest is that depicting Patras of Paeonia attacking an infantry soldier and the many surviving coins showing Alexander fighting Porus, the former on horseback, the latter on an elephant. The restricted field of a coin does not allow equipment to be shown in proper proportion, but for this survey what is important is the evidence for the positioning of the cavalryman's hand, which is always close to the centre of the lance.

In order to evaluate this evidence effectively some discussion as to how this weapon might have been used is needed. No evidence exists showing lances used couched or with two hands, either above the head or across the horse's shoulders (29). All Hellenistic evidence shows the lance used in one hand, either underam or overam, much as the hoplite spear was used. It has been shown above that infantry *sarisai* were used two handed and held close to the butt; Polybios says as much and the huge counterweight found at Vergina gives substance to his evidence. A cavalry weapon could not have been used in this way. It would have had to have been grasped close to its centre of gravity if it were to be used effectively. Furthermore, it would not have been practical to balance the weapon with a heavy buttspike without making it too cumbersome for use from horseback (30). If this conclusion is correct, then it can be tied to the art evidence discussed above and an estimate as to the length of the Hellenistic cavalry spear can be made.

As has been said, Markle took the extreme position that the Hellenistic cavalry spear was effectively the same size as the infantry *sarisa*. He even cited the Kinch painting as proof for the use of a central sleeve like that found in the Vergina cist. He concluded that the weapon was fifteen to sixteen feet in length. Other scholars have not been as categorical, the general conclusion being that cavalry used a lance in this period. Where Markle's analysis is fundamentally challenging is in regard to the weight of the weapon, which, he argues, would have been the same as an infantry *sarisa*, fourteen pounds. Other scholars have disagreed; for example Manti

argued cavalry lances would have weighed approximately four pounds (31).

Evidence demonstrates that cavalry lances in the Hellenistic period may have been as long as infantry *sarisai*. It also shows that the weapon was used differently, one handed and held near the centre of the weapon. Thus, whereas Markle's conclusion as to the length of this weapon can be accepted, his position that the weapon was as heavy as its infantry counter-part cannot. This is supported by the only detailed record of combat with cavalry lances, Arrian's account of the fighting at the Granicus river (32). Arrian was an experienced soldier, albeit in a military system some four hundred years after the event, and he based his account on the history of Ptolemy Lagou, another veteran and eyewitness of Alexander's campaigns. The fighting was fast and furious; lances were broken as the Macedonians tried to kill their enemies. The manner in which Alexander wielded his weapon is typical of lancers of later ages, the weapon being manipulated swiftly and directed at a series of opponents. The implication is that the weapon was light, yet strong enough to remain serviceable, although, as the narrative demostrates, it could shatter in combat. The conclusion that must be reached is that the Hellenistic cavalry spear was a long, light lance.

The manner in which the lance was used deserves attention. Hellenistic cavalry did not couch the lance, in the medieval fashion, nor did they use it two-handed as the steppe warriors of antiquity or the auxiliaries of Rome's imperial armies did. The way the ancient lance was used was related to the fact that the stirrup was not introduced into the west until the seventh century

A.D. Scholars have for generations questioned how lance-armed cavalry could have been effective without this simple technological item. Markle demonstrated that his reconstruced *sarisa* could be used from horse back without stirrups and there are many instances of charging stirrupless cavalry being effective in the ancient period, from the Companions of Alexander to horse barbarians from the Steppes. It is clear that the lack of the stirrup did not decrease the effectiveness of horse significantly (33). That being the case it did affect the way in which the lance was used.

As has been shown, Hellenistic cavalry used the lance single-handed in two ways, underarm and overarm. Markle demonstrated that his reconstructed *sarisa* could be used both ways and that neither was any more fatiguing than the other. He did note, however, that it was difficult to change from the overarm to the underarm thrust and *vice-versa*, and that such a manoeuvre would have caused confusion amongst cavalry drawn up in military formation.

The reason why this single-handed style was preferred over the couched, two-handed style is difficult to determine. Neither single-handed technique could have used the momentum of the horse in the same way that couching, or to some extent the two-handed thrust, would have. This was because of the lack of both stirrups and a proper saddle by Hellenistic cavalry, both of which are needed if a cavalryman is to use effectively the weight and speed of his horse whilst remaining mounted. The underarm and overarm thrust of the period reflect this deficiency in cavalry technology. Markle argued that

the two-handed thrust was not used because of the loss of horse control that it caused, which - as will be demonstrated - would have been critical for the success of the fast flowing tactical system used by Hellenistic cavalry formations (34). Despite this, Hellenistic cavalry was clearly effective. Under what circumstance each type of thrust was used is difficult to determine from the sources. The art evidence cited is inconclusive. The underarm thrust is used against infantry, the overarm against game, but since both are similar targets, there appears to be no reason to ascribe advantage to either type of thrust. Of the two techniques, the underarm seems the more natural, allowing dismounted targets to be attacked or the horses of enemy cavalry. The overarm may have been the favoured anti-cavalry technique, marking out the mounted soldier rather than his horse as the target. Written evidence does nothing to help solve this problem.

The overarm thrust may have evolved from Classical practices. Gardiner argued that the most comfortable way to carry a ready javelin was point down, the rear of the weapon resting on the shoulder, in a way very similar to the later Hellenistic practice (35). It is clear that cavalry equipped with javelins were expected to fight with these weapons should they become engaged in hand-to-hand combat, Xenophon said as much (36). Classical cavalrymen may have found the overarm thrust the logical close-combat position after holding their javelins ready for throwing. The use of this position in the Hellenistic period may, therefore, have simply been the result of military tradition.

It is difficult, therefore, to determine why two styles of fighting with the lance were used in the Hellenistic period and the possible advantages of either. The conclusions that may be reãched, however, are that once chosen the trooper had to keep to his fighting style, as change in stance would have caused disorder in the cavalry formation in which he stood. Furthermore cavalry combat in the period was not in the style of a breakneck medieval charge knee-to-knee with couched lance; rather it was in the form of individual fencing matches in which the momentum of the horse played little part. At the Granicus Arrian records that the fight was unusual, close packed like an infantry *mêlée,* the implication being that a cavalry battle would normally have been an open-order affair, where individual weapon handling and horsemanship skills would be paramount. In such a situation lances would be plied until they broke, whereupon the soldiers would fight on with either the butt ends or resort to swords (37).

A debate has arisen regarding the use of the shield by Hellenistic cavalry. The accepted view is that Hellenistic cavalry did not use the shield until later in the period. There were some exceptions, for example a cavalry type known as 'The Tarentine' existed. This type is recorded as early as the Diadochi Wars and scholars have argued that these soldiers may have used the shield. The actual date at which the shield was taken up by Hellenistic cavalry cannot be determined with certainty, indeed many writers on this subject have been content that to accept Alexander's cavalry were shieldless and that the Diadochi introduced this item of equipment (38). It is important

to attempt to determine the date of shield introduction with more precision in order to evaluate any possible effect it may have had on tactics.

References to shield use appear early in the period, during the reign of Alexander the Great. Arrian records an incident where cavalry, sent forward to seize a hill, rode to the position and dismounted with shields (39). Modern scholars have debated the importance of this evidence, since the soldiers refered to were not ordinary Macedonian cavalry, but *somatophylakes*, the special bodyguards of the king. As such, they may have had servants with them to carry their shields when they were mounted, a common ancient practice. Further the shields refered to were *aspides*, a Greek word normally used for infantry rather than cavalry shields. Many scholars, therefore, reject the evidence as indicative of widespread use of the shield by Alexandrian cavalry.

A second incident comes from Plutarch's and Diodorus' account of the battle of the Granicus River (40). Both record that Alexander used a shield. Arrian, however, the primary source for this action, makes no mention of a shield in his detailed account of the fighting, and hence Plutarch's and Diodorus' evidence has been rejected by scholars.

Post-Alexandrian references to shielded cavalry are equally scarce. Appian records Antiochus III using cavalry called *argyraspides* at Magnesia, implying these horsemen were equipped with silver shields (41). It is clear that Appian confused Seleucid guard-cavalry with the *argyraspid* infantry, a well documented *élite* infantry unit of the Seleucid army.

In book six Polybios records how Roman cavalry adopted Greek shields because they were more sturdy and better for offensive use (42). He describes a *thureos* covered in ox-hide with a large boss. Polybios' reputation as a military writer gives a lot of weight to this statement, and this is the first conclusive evidence for shield use by Hellenistic cavalry.

Polybios' evidence may be supported by the cavalry representations on the Aemilius Paullus monument at Delphi, which celebrated the Roman victory at Pydna (43). There are many mounted figures on the frieze and it is difficult to determine without doubt to which army they belonged. A. J. Reinach identified the cavalryman on the north-east face as a Macedonian, the rest as Thracians from an incident at the beginning of the battle of Pydna. He conjectured whether the Macedonian was a member of Perseus' royal guard or an Odrysian. The former, although logical given the monument's propaganda function, is conjectural. The use of the frieze as evidence is further complicated by the large number of national contingents in Perseus' army. Despite these problems, the monument does give general support to Polybios' evidence that the shield was in use by mounted soldiers in Greece and Macedon by the time of the Third Macedonian War. It may also be noted here that this monument is the only art representation of any type of Hellenistic cavalry equipped with shields.

The tacticians make reference to cavalry called *thureophoroi,* i.e. cavalry carrying the long shield (44). They do not elaborate on the tactical role of this type of horseman. The tacticians may be referring to the equipment of

Roman Imperial cavalry. This is especially the case with Arrian's work, the cavalry sections of which are devoted to the horse of the Imperial Roman army of the second century A.D.

The evidence therefore suggests that the shield was only used by Hellenistic cavalry in Macedon and Greece towards the end of the period. The cavalry of Philip and Alexander fought without the shield, as did those of the Seleucid and Ptolemaic armies. The motive for the adoption of the shield in the west is twofold - firstly, the geographical proximity of these areas to western Europe where the cavalry shield was in common use throughout this period, and, secondly tactical peculiarities of war in this region.

It is a commonly held view that the shield was adopted by Greek and Macedonian horse from Italy, perhaps as a result of Pyrrhus' campaigns there in the early third century, perhaps crossing the Adriatic later (45). A problem exists reconciling the very early date of the Pyrrhic War with the evidence of Polybios, which is from the later Hellenistic period and which also paradoxically states that the Romans modified their cavalry shields after encounters with the Greeks! A solution might be to attribute the introduction of the shield to the Celts, who used cavalry equipped with the *thureos*. It may be from this people that the evidence of Polybios - and perhaps the Aemilius Paullus monument - derives (46). Celtic military dress affected Roman equipment to a great extent and may have had a similar effect on the western Hellenistic powers, providing them with a shield with a stout boss, the

typically Celtic 'barley corn' boss. Celtic soldiers were also a common feature of Hellenistic warfare, either as mercenaries or invaders, thus providing the avenue by which their military influence would have entered the Hellenistic world.

It must be emphasised that the shield spread no further than the westernpart of the Hellenistic world. The reason for this may have been extraordinary tactical problems faced by cavalry in this region that did not appear in the east. Firstly, whereas cavalry was used on a massed scale in the east, it was only deployed in small numbers in the west. This affected tactics. Cavalry was used in large, often decisive sweeping attacks in the east, but in the west it formed a more equal adjunct to the other fighting arms. The result of this may have been a need for greater protection. The sheer weight of numbers and the speed of attack would have protected the shieldless lancers of eastern armies. Small numbers of horse deployed in the west, on the other hand, may have been vulnerable to missiles prompting the adoption shield when it became available. Secondly, the javelin may have replaced the lance as the main cavalry weapon in western armies, the threat becoming a skirmishing rather than a charging enemy. It is noteworthy that the shield recorded by Polybios was the large *thureos*, rather than a small target, implying missile defence by the area covered by the shield, rather than hand-to-hand defence which might have been better afforded by a smaller shield that could be manipulated more easily.

Protection was also afforded by body armour, for the head, torso and

perhaps the legs. Modern scholars have generally accepted that Xenophon's preference for the Boeotian helmet continues into the Hellenistic period - its advantages are discussed above. Many other helmet styles have, however, been discovered. It is clear that no uniformity existed and some troops would sacrifice the good visibility qualities of the Boeotian type for the greater protection of others (47).

Evidence, both art and literature, shows that intermediate cavalry wore armour to protect the torso. The evidence shows two general types, the *linothorax* and a cavalry version of the muscled cuirass - with a flared waist for ease of riding. Cavalry were a high prestige arm of Hellenistic armies and often formed from the upper echelons of Hellenistic society. Under such circumstances metallic armour would have been normal, economic factors taking a low priority in determining the expense of equipping a mounted force. The role of the intermediate type as the striking force of the army would have also encouraged the use of the best equipment available. It is logical to conclude that all intermediate type cavalry troopers were provided with protection for the torso (48).

Protection for the legs was an important consideration for cavalry in the ancient period. The thighs would have been the primary target for infantry fighting cavalry, and a major wound in the thigh can rapidly cause death. The thighs would typically have been protected by the *pteruges* of the soldier's body armour. The lower legs, however, appear to have had no such protection. The evidence is fragmentary and indicates that cavalry of the

period relied on high boots to protect this area (49).

Xenophon recommended a flexible arm defence much like that used by later Roman gladiators for defence of the right arm (50). No Hellenistic source supports the introduction of such armour and the evidence shows no protection for the arms aside from clothing or perhaps the cavalry cloak which may have protected the left arm.

Finally the intermediate type were equipped with swords. These weapons were for use in prolonged *mêlée* when the lance broke, but even so it appears that the buttspike of the lance was preferred to the sword. Xenophon recommended the sabre-like *machaira* and it is clear that this type was used in the Hellenistic period, in the form of the *kopis*. Many types of sword have, however, survived from the period and it is impossible to determine if any one type was favoured (51).

The equipment of the intermediate type of cavalryman, the backbone of the Hellenistic mounted force, differed in small, but important, respects from that of Classical cavalry. Both types were armoured, largely due to their high social position and hence large reserves of wealth. Both suffered from lack of stirrups or proper saddles. The great difference, however, was the offensive weapon carried by the Hellenistic trooper, the lance. The intermediate type was a shock cavalryman whose role in battle was to break the enemy line. This is fundamentally different from that of the Classical trooper whose role was one of skirmisher and auxiliary. In the west Hellenistic cavalry evolved further, taking up the shield and perhaps the javelin. As will be shown, their

role in battle reverted to a more secondary one. In the east, however, the intermediate lancer dominated mounted warfare and remained the mainstay of this fighting arm until the close of the period.

c) The Cataphract

A heavier type of cavalry was used by the Seleucid army. These soldiers were called cataphracts and both man and horse were fully armoured (52). Cataphracts were of oriental origin, probably invented on the Steppes and spreading south into the Persian empire (53). The Seleucids inherited this type of horseman and deployed large numbers of cataphracts in the wars of the later third century. Later the Romans, Parthians and Sassanid Persians continued the tradition, making cataphracts a common feature of eastern warfare through the early part of the Christian era and beyond into the Middle Ages (54). The Classical Greeks met cataphracts whilst fighting Persia, but despite the advice of Xenophon they did not use such troops in their armies (55). Cataphracts were an innovation for the Hellenistic military system and need to be examined for their effect on battlefield tactics.

The sources depict the Hellenistic cataphract as exceptionally well armoured. This image is common in ancient literature from Herodotus to Ammianus Marcellinus (56). It is difficult, however, to reconstruct the equipment of this troop-type precisely from Hellenistic written and archaeological sources alone. An examination of cataphract equipment must, therefore, draw upon written and pictoral evidence from the ancient period as

a whole.

The most striking piece of equipment used by the cataphract was horse armour. Evidence shows two general types, half armour covering the front of the horse and full armour, much like an armoured blanket, with neck and head protection added. The former can be seen on the Pergamum reliefs in the Hellenistic period, but is hardly ever attested in evidence from other periods of ancient warfare. It may be the equipment of the Seleucid guard cavalry at Magnesia, who were said to be equipped as light cataphracts. Full armour, on the other hand, is a common feature of ancient art, although no example has survived from the Hellenistic period. An example of such armour, from the middle Imperial Roman period, was found at Doura Europus (57). This armour must have been a great encumbrance for the cataphract horse.

Horse armour could be manufactured from several types of material. Written evidence is not clear as to whether the protection of man, horse or both is in question. Despite this armour could be made of metal, the example found at Doura being made of bronze, perhaps to counteract the corrosive effects of the horse's sweat. Horn and felt armour are also found in the sources, written and art, perhaps in an effort to reduce the weight carried by the horse and once again to combat possible corrosion (58). Despite the efforts of ancient armourers, it is clear that cataphract horses fought encumbered. Indeed the sources refer to a special large breed of horse, the Nisaean, being developed by the Seleucids to mount their cataphract corps

(59).

The Pergamum reliefs may depict cataphract armour (60). It is difficult to relate the pieces of armour to each other due to the subject of the frieze, a trophy of piled arms in no apparent order. Items similar to Xenophon's arm protectors are shown, which may have been used to protect the cataphract's arms, and perhaps his legs. Later reliefs show cataphracts with leg protection and written sources attest to the vulnerability of cataphracts in this region of the body (61). The reliefs also show helmets with masks fitted to protect the face, which may also have been cataphract equipment. *Linothorakes* and muscled cuirasses appear on the reliefs, but as they are standard Hellenistic equipment it is difficult to attribute their use to cataphracts alone. The muscled cuirass has been used in reconstructions of Seleucid cataphracts, simply with the addition of tubular defences for arms and legs - Gamber substitutes greaves - and a helmet with face protection, but although the reconstructions are based on logic, they are obviously speculative (62). It is difficult to determine if the cataphract carried a shield. With such heavy armour the added protection may not have been necessary, and most of the art evidence show cataphracts without shields. Finally, it would have been logical for Seleucid cataphracts to have followed the standard Hellenistic practice and deploy shock cavalry without the shield.

It is generally accepted that the offensive weapon of the cataphract, in this and later periods, was the lance. The only Hellenistic evidence that supports this view is Livy's statement regarding the Seleucid guard cavalry at

Magnesia, who, he says, were equipped like the cataphracts but with lighter armour (63). Livy probably used Polybios as his source for Magnesia and it is noteworthy that this experienced cavalry general did not see fit to differentiate in armament between the cataphracts and the guards. Hence both must have been equipped with the standard Hellenistic offensive cavalry weapon, the lance. It would also be logical to accept that a sword or cavalry axe might have been added to complete the cataphract's panoply.

To conclude, by the late third century the Seleucid army had amalgamated its Macedonian and Oriental traditions. The mounted shock arm of the Hellenistic military system had been supplemented with the heaviest cavalry type known to the ancients, the cataphract. It is noteworthy that only the Seleucids developed this type of cavalry, the geographic location of the empire - including as it did the Iranian plateau - being the reason. Added to this was the fact that horse armour was generally only adopted in the ancient world to stop arrows wounding horses, not as protection from hand-to-hand weapons. Of the Hellenistic powers only the Seleucid empire, bordering as it did the steppe-lands of central Asia, was faced with large numbers of bow-using enemies (64).

d) Light Cavalry

Light cavalry formed the third type of cavalry deployed by Hellenistic armies. It fell into two broad categories, horse-archers and mounted javelinmen. Hellenistic armies used both types in varying numbers depending

on availability. Both styles of fighting were highly developed in the Hellenistic period.

The horse-archer had developed long before the Hellenistic period on the steppes of central Asia. Such troops formed the main military strength of the peoples of this area up until the nineteenth century A. D. This style of fighting was exported to the sedentary cultures to the south, either through the use of mercenaries, through conquest or by imitation. So strong was steppe influence on horse-archer tactics that the Greeks referred to any horse archers as 'Skythians', the steppe nomad nation with which they were most familiar, regardless of the actual nationality of such soldiers.

The primary weapon of the horse-archer was a composite bow short enough to be used from horseback. The ranges of ancient bows has been discussed above (see pp.183ff.); suffice it to say here that horse archery was probably effective up to one hundred yards. It is not clear how far being mounted affected accuracy, but it is clear from the sources that infantry bowmen outranged their mounted counterparts. Hence foot-archers became the tactical counter to the horse-archer (65).

The combination of bow and horse dictated horse-archer tactics. A combination of advance and retreat, never actually coming into combat, was used to cause confusion to enemy formations. Feints were used in an attempt to pull enemy units out of the line. If successful, such unfortunates could be swamped by horse-archers - isolated, surrounded and shot down. In pure horse-archer armies these tactics were practised on a mass scale over a long

period of time, a prime example being Crassus' Parthian campaign of 53 B. C. It is important, however, to appreciate that victory only came to the horse-archers after prolonged fighting, often over a period of days (66). On a smaller scale, horse-archer tactics would have been used to supplement the other combined-arms doctrine inherent in Hellenistic warfare.

The horse-archer carried a lot of ammunition. Bowcases that have been found may have contained up to one hundred arrows, and scholars have concluded that several such cases may have been carried into action. Rates of fire were high: Cerrenko estimated up to twelve arrows could have been shot per minute. The fighting at Carrhae in 53 B. C. demonstrates the large numbers of arrows that could be expended in a prolonged engagement, for the Parthians replenished their supply from pack-camels posted specifically for this purpose (67).

Horse-archers may have been equipped with shields, for there are several Skythian artifacts representing shielded horse bowmen. Arrian also records that a Skythian had his shield pinned to his breastplate by a Macedonian ballista-bolt during Alexander's crossing of the Oxus (68). Despite the predominance of unarmoured representations of Skythians and other steppe types in the archaeological record, it is clear that armour could also have been worn by these soldiers (69). This added protection did not, however, radically effect basic horse-archer tactics, which emphasised keeping at a distance from the enemy and overpowering him with arrows.

Hellenistic armies did not deploy horse-archers in large numbers.

Alexander and the Seleucid dynasty used mercenary horse-archers in their armies, and as such must have used horse-archer tactics at a smaller, auxiliary level (70). The only detailed record of Hellenistic troops facing large numbers of horse-archers is Alexander's campaign to secure the northern boundaries of his empire. It was during this fighting that an isolated detachment under Andromachus was destroyed by horse-archers (71). The Seleucid army must also have fought border skirmishes, if not small wars, against Steppe peoples. Indeed the Seleucids may have introduced cataphracts into their army to protect the horses of cavalry fighting Steppe invaders (72).

The second broad type of light cavalry were those equipped with javelins. The javelin has been discussed above (see pp.178ff.) and it may have been more effective when used from horseback. Mounted javelinmen would have been able to ride within a very close distance of the enemy, release their weapons and retire. This tactic was not available to *psiloi* and, despite the speed of the cavalry, was dangerous. Xenophon's description of mounted javelin drill supports this view, as does certain art evidence (73).

Javelin-equipped light cavalry also come into the problem of the use of the shield problem discussed above with regard the intermediate cavalry type (74). A specialist shielded, javelin-equipped light cavalryman may have existed in the form of the 'Tarentine'. Scholars are not clear why this type of light horse was singled out in the sources. One explanation is that they were shielded, but evidence for this is scanty. Coins from the Greek city of

Tarentum, located in southern Italy, depict light cavalry using shields. Further, the theory of an Italian origin for Hellenistic shield-use has been used to argue that 'Tarentines' carried shields. It would have been logical to equip skirmishing horse with shields as their tactics involved fighting at a distance and made them prone to engaging in missile exchanges. The evidence is, however, inconclusive (75).

A third type of light cavalry was those equipped with the lance, who were presumably expected to fight in close combat. Most notable amongst this type are the *sarisaphoroi* or *prodromoi* of Alexander's army. Scholars have debated the true function of this corps and it is clear that they performed two roles. At the Granicus they both screened the advance of the army and fought with the Macedonian right in the river crossing. It must be emphasised that the lance was a typical light cavalry weapon in later periods, for example the Cossacks of Russia or Napoleon's Polish lancers. However, in the context of this study the *prodromoi* are best categorised as intermediate cavalry. Strategically they performed light cavalry functions, but then so did most of the mounted force of a Hellenistic army. Tactically, however, they fought at close quarters, and this was not the function of most Hellenistic light cavalry, their role being that of a battlefield skirmisher (76).

Armour may have been worn by Hellenistic light cavalry. The definition 'light cavalry' is the result of tactical function rather than equipment. The *prodromoi* can be defined as intermediate cavalry because they engaged in close combat on a regular basis. Conversly, armoured cavalry that used

skirmishing as their main battlefield tactic may be defined as 'light'. A percentage of the cavalry force in the Classical period were armoured without this affecting their essentially light cavalry tactics. It is important to be aware that this may have continued into the Hellenistic period. Armour, ranging from helmets to full body protection, may have been worn by a varying number of Hellenistic light cavalry (77).

Finally it is clear that javelin-equipped light cavalry may have carried sidearms of some kind, swords or daggers. It is not possible to establish any form of pattern to the use of sidearms. It is important, however, to appreciate that these troops could engage in hand-to-hand combat if circumstances dictated and that this would have influenced tactics.

D) Cavalry Organisation

The tactics used by Hellenistic cavalry formations were directly related to the organisational system used in the period. Cavalry were deployed in small units which allowed rapid, flexible movement on the battlefield. These small units also allowed cavalry to use special formations such as the wedge. Thus we must understand the organisational system in use in the period before we can understand the tactics used.

Much evidence for Hellenistic cavalry organisation has survived. The tacticians record a complex system of organisation in detail which is, unlike the cases of previous arms surveyed, supported by a large body of historical references. It is clear that Hellenistic cavalry used a common organisational

system, debate only arising when the actual strengths of the sub-units is in question.

Advances in cavalry organisation were already underway in the later Classical period. Xenophon records proper organisation for horse in his treatise on the cavalry commander. There is also evidence that the Athenian army was using a proper system of organisation by the later Classical period. These later Classical units were approximately one hundred men strong (78).

The use of small formations as the basic tacical unit continued into the Hellenistic period. The sources commonly refer to units such as *ilai*, and this formation will be the starting point for our survey. The strength of the *ile* is not uniform throughout the sources, numbers ranging from fifty to three hundred men, and this lack of precision has produced debate amongst scholars (79). For our purposes it is enough to say that the *ile* was the smallest unit of manoeuvre; actual numbers varied, but stood around one hundred and fifty men.

The sources record that *ilai* were used by Hellenistic armies throughout the period. Alexander's army deployed eight *ilai* of *hetairoi*, one of which was a guard unit, and four of *prodromoi*, at the beginning of the Persian campaign. The Thessalian and allied Greek horse may also have used the *ile* (80). Arrian is the primary source for this period and he does not detail the size of the Alexandrian *ile*. It is primarily from the Alexandrian evidence that scholastic argument over *ile* numbers stems.

The *ile* was used by the Diadochi in their wars for control of Alexander's

empire. Of particular note are references to *ilai* at Gabiene. Diodorus' account records *ilai* of respectively fifty and three hundred in the same action, somewhat confounding any attempt to define the formation in terms of numbers of troopers (81). Polybios compared the organisation of Roman cavalry with that of the Achaean League at the turn of the third century. He emphasised how the *ile* was a sub-unit of a larger formation. Livy, writing of the same period, uses *alae* or *turmae* to describe similar formations. Both of which are small units of around one hundred men (82).

The tacticians also give details of *ilai*. Once again the formation is small, approximately fifty men, and the basic unit of manoeuvre. A minor problem with the tacticians is that Arrian, at least, may confuse Hellenistic fighting units with those of the Roman army of the second century A. D. (83).

Units larger than *ilai* were commonplace in the Hellenistic period, the most common being the *hipparchy*. Armies of the period used *hipparchies* in two ways. For the smaller armies of Greece, the term denoted the entire cavalry command of the state. For the large armies of the eastern monarchies, the *hipparchy* was akin to the cavalry regiment of more modern times, the *ilai* performing a similar task to the squadron and being grouped together for ease of tactical deployment and administration (84).

The *hipparchy* was introduced in a proper military sense by Alexander the Great, probably in 330 B.C., references before this date probably being anachronistic. The introduction of the *hipparchy* has caused debate amongst scholars, although only some of the points need examination here.

Alexander's *hetairoi* were initially composed of eight *ilai*. In 330 B.C. he was forced to divide the command as a whole in two, because of an influx of reinforcements and to prevent the *hetairoi* becoming a dangerous weapon for possible political rivals. At first there were only two *hipparchies*, but as time went on the number increased; scholars argue over the final figure, but there were at least five. The Alexandrian army still retained the *ile*, *hipparchies* simply being composed of groups of these smaller units (85).

There were strategic motives for the introduction of the *hipparchy*. Up to Gaugamela, Alexander's campaigns had been dominated by two large armies manoeuvring to and fighting a series of set-piece battles. After 330 B.C. the nature of the warfare changed. Alexander was faced with the problem of pacifying the large areas of central Asia and countering hit and run raids by remnants of the Persian army. Alexander led a series of all arms columns to sweep the area and bring the enemy to battle. Eight *ilai* grouped into a single corps of *hetairoi* were not suitable for such fighting. Alexander therefore reorganised his cavalry into larger battlegroups, the *hipparchies*, and allotted them to task-forces as the situation demanded (86).

The *hipparchy* also had a tactical function, as is illustrated by the battle of the Hydaspes (87). Here the Macedonian horse deployed and manoeuvred in *hipparchies*, whereas previously they are always recorded as fighting as *ilai*. The *hipparchy* was, therefore, also a way of moving large numbers of horse around the battlefield.

Evidence for later use of the *hipparchy* is less closely related to battle

accounts. Polybios records the existence of a *hipparch* in his short treatise on cavalry tactics (88). In this case he refers to the commander of a state's entire cavalry arm - note also the post was a senior political office. Papyrological evidence from Ptolemaic Egypt proves that the *hipparchy* was in common use in that state (89), and of course, there is the evidence of the tacticians who all refer to this formation and how it was broken down into sub-units (90). That the *hipparchy* was used in battle after Alexander can only be inferred from the sources. There are substantial units that fight much like the *hipparchies* of Alexander's day, but there are not constant clear references to the *hipparchy* as a specific unit in sources for this period.

The size of the *hipparchy* has been the subject of debate, the most common estimate being a unit of one thousand men. It is clear that *hipparchies* were always composed of numbers of *ilai*, once again prompting a debate over numbers. Galili took a rather different line in his analysis of the cavalry forces at Raphia. He argued that a large *ile* of five hundred and twelve men was used, a formation that would have functioned, presumably, much like a *hipparchy* (91). Once again, for the purposes of this analysis a detailed discussion as to the numerical strength of the *hipparchy* is without benefit; suffice it to say that it was a large formation of horse composed of a varying number of *ilai*.

Other organisational units existed for cavalry in the Hellenistic period, notably the *lochos* and *tetrarchy* of the Alexandrian period (92), but considerable debate surrounds both units. They were either part of

Alexander's reform of his *hetairoi* into *hipparchies*, used as transitional units, or they became a permanent feature of Macedonian military organisation. The *tetrarchy* is a difficult unit to identify. Modern opinion tends towards a *tetrarchy* composed of four *ilai* as a transitional unit during conversion to a proper *hipparchy* organisation. The *tetrarchy* may have, therefore, disappeared from the Macedonian system of organisation once the *hipparchy* was in place, or it may have been retained when special task forces were needed. The *tetrarchy* was an Alexandrian formation, and, whatever its function, later armies did not use it. Scholars are more in agreement with regard to the *lochos* which is seen as a unit one step below the *ile*. Generally it is accepted that two *lochoi* made one *ile*. Particularly interesting from a tactical point of view is Polybios' reference to how he believed *lochoi* and *dilochoi* were used. He records a drill where *lochoi* and *dilochoi* could dash out at the enemy (93). These small units may therefore have been used in harassing manoeuvres.

Polybios often records the use of small forces of cavalry, often in units he calls *oulamoi* (94). This term has been interpreted in several ways. Some scholars see it as a Polybian term for *ilai*. This conclusion cannot, however, be used in all situations, in particular where Livy transliterates the term into the Latin *turmae*, units of some thirty men. Of particular interest is Polybios' and Livy's account of Cynoscephalae where the Romans sent forward ten *oulamoi/turmae* of cavalry, which would have totalled between two hundred and fifty and three hundred horse. Therefore unless Livy is mistaken in his

terminology, the *oulamos* was considerably smaller than the *ile*.

As has been noted, Polybios uses the term *oulamoi* in reference to cavalry drill. He shows that they were used to deploy larger bodies of horse and manoeuvre them efficiently on the battlefield. Of particular significance is his evidence that cavalry should be trained to dash forward and then return to the ranks of their *oulamoi*, *ilai*, or *hipparchy*. By implication he proves that this formation was the smallest in a chain of organisation that went up to the *hipparchy*. It is also clear from his work that *ilai* were the basic fighting formation and that the sub-units of *oulamoi* were intended to facilitate effective use of tactics by the *ilai*. The one exception to this was the battle at the Axius river in 208 B.C., where *oulamoi* fought as separate units. This does not, however, contradict the analysis as the fighting at the Axius was confused, the Seleucid army being deployed in an emergency formation to repel a surprise Bactrian attack. It is noteworthy that victory went to the Seleucids when Antiochus attacked with the 2,000 cavalry 'accustomed to fight around him', presumably the *agema* and the *hetairoi*, probably operating as two *hipparchies* using standard tactics (95).

Polybios once records the use of a formation smaller than the *oulamos*, a *semeia* ( σημεία) (96). The size of these units is unknown; they may have been the equivalent of the Alexandrian *lochos*. Their role is unclear, but they must have once again been designed to facilitate the smooth running of the higher elements of the organisational structure. As with the *oulamoi* Polybios does not record that these units fought independently.

Finally there are references in Ptolemaic papyri to a formation called a *dekas* (97). The *dekas* was obviously a unit based on ten; indeed Polybios refers to a Roman formation called a *dekas* led by a *decurion*. The word is also used by Xenophon in reference to a cavalry formation. There is no extant battlefield reference to the *dekas*.

It is therefore certain that a complex system of organisation existed amongst Hellenistic cavalry. The larger states of the east deployed cavalry in *hipparchies* of perhaps one thousand men and used the *ile* within these larger formations as the unit of manoeuvre. In the smaller armies of Greece the larger formations were not used. These states, however, still used the same basic organisational concept as the eastern powers, but on a smaller scale, deploying their cavalry in *ilai* and *oulamoi*. This system was prevalent throughout the period and the advantages it gave mounted troops need explanation.

The first advantage was flexibility in deployment. This factor operated on both the strategic and tactical level, for example, the use of the *hipparchy* in Alexander's campaigns in central Asia (98). Until Gaugamela, the Macedonian cavalry had been essentially a battlefield force acting under the close supervision of the king. As such it was organised into *ilai*, no larger formation being necessary. After the defeat of the main Persian army, however, the strategic role of the cavalry expanded. New, larger formations were introduced - *tetrarchies* then *hipparchies*. These formation were large enough to act in a semi-independent, strategic role, such as in the pacification

of central Asia, where they formed the core of various task-forces deployed by the Macedonians.

The Hellenistic organisational structure also aided the deployment and use of the large numbers of horse. The armies of the Hellenistic kingdoms expanded the size of their mounted arms far beyond that which had been used by Philip or Alexander. If one accepts Tarn's assertion that the *hipparchy* was generally 1,000 strong, then the eastern armies would have deployed six to eight *hipparchies* as a matter of course. The use of the *hipparchy* as a permanent organisational unit would have allowed for more effective massing of horse on the battlefield, in effect delegating the minutiae of the deployment of the *ilai* to the *hipparchs*. The *hipparchy* would have also aided fast and efficient manoeuvre once the battle got underway, once more by delegation to the *hipparchs*. Evidence for use of the *hipparchy* in this fashion comes from Gaza and Raphia (99).

It is also noteworthy that the introduction of the *hipparchy* into the Alexandrian army was accompanied by the infusion of Orientals into the ranks of the *hetairoi* (100). One of the motives for this was clearly to integrate the new comers into an existing tactical system. This would have remained the case in later armies, and troops who constantly served together in the same *hipparchy* would have developed into a well-oiled fighting unit, more efficient in battle than groups of *ilai* thrown together at short notice in an *ad hoc* fashion.

The use of the *hipparchy* by the Ptolemaic and Seleucid armies may have

also afforded their governments administrative advantages when it came to the allocation of land to military settlers and raising cavalry in time of crisis (101). It is clear from Egyptian evidence that *cleruchs* were allocated to *hipparchies* on a long-term basis, since they are quoted in papyri with their *hipparchy* number or ethnic designation. There is far less evidence for the Seleucid empire; we can only conjecture that a permanent organisation would have made recruitment more efficient. Of course, in Hellenistic Greece, the *hipparchy* would have performed a similar administrative function, but on a smaller scale.

Hellenistic cavalry therefore used a far more complex organisational structure than had their Classical Greek counterparts. This was partially a necessity as the numbers of cavalry in Macedonian armies expanded. It was also, however, the result of a change in tactics whereby small unit charges and manoeuvre became the order of the day. In the next section we shall examine the tactical systems used by Hellenistic cavalry and link them to the complex organistional systems devised in this period.

## E) Cavalry Tactics

### a) Introduction.

Cavalry tactics in the Hellenistic period differed markedly from those used in the Classical period. Cavalry changed from an essentially auxiliary

skirmishing and scouting force to an arm of decision, capable of turning the tide of battle. This can be ascribed to three main changes in the nature of mounted warfare from the Classical to the Hellenistic period. Firstly, the equipment of the troops, as has been shown above, was more orientated to hand-to-hand fighting. Secondly, the numbers of cavalry increased. Finally, more advanced fighting formations were developed. When placed together these factors produce a complex and novel system of battlefield tactics.

The advances in cavalry tactics in the Hellenistic period must be taken within the overall all-arms framework that is characteristic of the military systems of this period. Some historians have taken the advances in horse warfare too far, attributing to cavalry a decisive role in battle that they did not have (102). It is the case, however, that an effective Hellenistic army had to have an effective cavalry arm, especially the new types of horse that charged into action. Generally an army that lost cavalry dominance on the battlefield was liable to envelopment and faced the collapse of the morale of its other troops.

A balanced view of Hellenistic cavalry tactics puts them into the combined-arms scheme of an army of the period. Their role was rapid attack, to open the combat and outflank an enemy, or to take advantage of tactical circumstance. They were the arm that paved the way for the victory of the foot soldiers. That Hellenistic cavalry could fulfil this role is a result of their tactical systems, which can be broken down into, firstly, the use of special formations and secondly, the tactical procedures themselves.

b) Cavalry Formations

Hellenistic drill and formation structure is remarkably uniform in our sources (103). Formation was used on two levels. Firstly, the *ilai* within a *hipparchy* could be deployed in various ways, giving a commander a series of combat formations. Secondly, the *ilai* themselves could assume different sub-unit formations, dependent on period, nationality or tactical mission. Obviously this was the result of the organisational systems employed in the period (104).

The smaller units were the building-blocks of the larger cavalry formations, and the simplest formation used by the sub-unit they used was the square. All the tacticians speak of its use (105). They say that it was used by Greeks, Persians and Sicilians, and by implication the square must have predated the Hellenistic period. The advantage of the square was ease of deployment, Arrian adding that it allowed a formation to hit the enemy in an ordered mass.

The sources do not agree on a standard depth for the square. If late Classical references are included, the the depth of cavalry units varied from four to ten ranks, with eight being the standard. This lack of standardisation was also the case with the width of cavalry formations (106). One important point stands out from this confusion, that cavalry did not rely on depth for victory as did infantry, because horse could not push on horse; indeed, it may have been the case that close formations would have been disordered by

animals biting and kicking each other (107).

Only Polybios records what frontage a cavalry square would have occupied. He states that eight hundred cavalry would have occupied one *stade* in eight ranks of one hundred files. He also wrote that a gap equal to one *ile* should be left between *ilai*, to ease manoeuvre. Given this, one trooper would have occupied approximately three feet of ground. Asclepiodotus' standard unit -a square, sixteen men wide - would have occupied forty-eight feet of ground (108). If Polybios' information is correct, Hellenistic cavalry took up a lot of room on the battlefield. They did not deploy in depth, but in lines composed of single units; a *hipparchy* might occupy two-hundred and fifty yards. The tactical implications with regard to command and control are obvious.

The square had disadvantages; for example, it would have been difficult to wheel or turn in battle. The tacticians record that officers were placed at the corners of the formation, clearly to counteract disorder. Further the gaps between *ilai* recorded by Polybios indicate that squares of horse needed plenty of room to manoeuvre.

There is no direct evidence for the use of the square in battle accounts, but this is not to say that the square was only a theoretical formation. The opposite is more probably the case, the square being so common a formation as to evade the attention of the historical writers.

The second formation recorded by the tacticians is the rhomboid (109). This formation appears only in the tacticians and is never mentioned in

historical accounts. The tacticians record that the formation was introduced by Jason of Pherae and that it was a Thessalian speciality. The great advantage of the rhomboid was its manoeuvrability. The rhomboid was formed in such a fashion as to place officers at the four points of the formation. The tacticians say that the men found it easy to maintain station inside the rhomboid since they simply followed their officers, 'as in the case of a flight of cranes'. The rhomboid would have been a far more efficient formation than the square to wheel and turn on the battlefield. It is a pity that none of the historical sources record this formation in action.

The wedge, or ἔμβολος , was a modification of the rhomboid and is found far more regularly in the sources (110). It is important to note that this study deals with a wedge formed from a single *ile* of cavalry. The ancients also used a larger 'grand- tactical' wedge, for example at Gaugamela (111), to break the enemy line. The wedge was simply half a rhomboid, and presumably it retained the rhomboid's advantage of manoeuvre with a saving in manpower. The wedge formed the shape of a delta with the point towards the enemy. As with the rhomboid, the positioning of officers was important: they formed up at the tips of the triangle. The tacticians tell us that the wedge was able to pierce the enemy line, more of which later. The wedge appears to have been a standard cavalry formation in the Hellenistic period.

The role of these formations is not obvious from the sources, but it is probable that each formation was a different stage in the development of cavalry formations. It is clear that the square was the earliest formation and

that the rhomboid and the wedge were introduced to Graeco-Macedonian warfare either later or from outside the Greek world. The tacticians agree that the rhomboid was a development by Jason of Pherae's Thessalian horse, whilst the wedge was adopted by the Macedonians from the Skythians and Thracians.

From these developments in formation stemmed changes in tactics and the battlefield role of cavalry. Classical cavalry tactics were essentially two fold. Firstly, hand-to-hand fighting was restricted to other cavalry; they were not expected to break enemy *hoplite* formations Secondly, they fought as skirmishers. Xenophon records the square in use for the former role, and he alludes to its use in the latter. An incident from the Corinthian War clearly demonstrates the use of the square in close combat. In this fight, from Agesilaus's campaign in Asia Minor in 396/5 B.C., the two bodies of cavalry simply charge one another and the Greeks are vanquished. Xenophon's cavalry treatise adds, however, more detail to the nature of cavalry operations in this period. In his reference to the mock training battle, he records two groups of horse in loose formations, loose enough for both sides to interpenetrate each other's formation (112).

Xenophon also records that squadrons should swiftly pursue and retire, producing an occilating effect. This may be training for skirmishing, javelin-throwing practice also being recommended in his treatise (113). Cavalry skirmish combat was not simply a haphazard affair with clouds of horse milling around and shooting whenever they saw a target. When large

numbers of horse were involved in this type of warfare they needed regulation, or else their numbers became a hindrance. The square, coupled with Xenophon's toing-and-froing technique by squadron, would have been a method by which cavalry could have advanced on the target, released weapons and retired to rest their horses and prepare more weapons. If conducted properly a constant pressure would have been placed on the enemy line for a long period of time.

The rhomboid may have been a development of the square as an anti-cavalry and skirmishing formation. This formation was only used by the Thessalians, a people well within the Greek cavalry tradition. Its use is not attested in battle, but the tacticians emphasise its manoeuvrability. The rhomboid would have made the tactics already used by the cavalry square more effective; it was simply a modification of an existing military technique.

The wedge, on the other hand, may have been a major departure from traditional Greek cavalry tactics. It was, according to the tacticians, taken from the Thracians and Skythians by Philip II for his Macedonians (see note 110 above). Evidence suggests that it was Philip's intention to make an already formidable Macedonian mounted arm into an aggressive mounted striking force such as had never existed in Classical Greek warfare (114). This new formation was linked to the introduction of the lance as a standard cavalry weapon (see above pp.235ff.) The number of Macedon's mounted arm and the introduction of a solid infantry base for the first time in

Macedon's military history, gave Philip's cavalry a tactical advantage to which the Classical Greek military system had no answer.

The wedge was, therefore, critical to the aggressive cavalry tactics that became the hallmark of Hellenistic mounted warfare. Ancient and modern commentators agree that the striking power of the wedge was derived from its ability to pierce an enemy line. Indeed, some modern writers have concluded that a cavalry wedge could penetrate a line of phalanx, either by shock alone or by striking the sub-unit gaps within the infantry formation (115). This writer, on the other hand, is sceptical about the possibility of this except in the most extreme of circumstances. Afterall, there is no source which directly supports such an assumption. The method by which this ability to rupture the line was achieved has been somewhat taken for granted. Aside from the analogy of an arrow striking a target, no examination of the mechanics of wedge-tactics has been made.

The first point is that despite the obvious similarity of the cavalry wedge to an arrow, the formation was composed of individuals and liable to disorder. This weakness was exacerbated by the fact that cavalry could not push upon one another as would infantry. The wedge must, therefore, have had properties other than its shape. To understand what these might have been, a basic picture of the nature of a mounted combat is required.

It has already been noted that Xenophon gave the impression that cavalry at full tilt would tend to interpenetrate each other's formations. This is further supported by Arrian's account of the crossing of the Granicus (116). He records that the battle was more like an infantry than a cavalry action, with horse pressing on horse and man on man. The implication is, obviously,

that cavalry battles would be open affairs, like the image conveyed by Xenophon. This is not confined to the ancient period; a quotation from the eighteenth century is useful,

> "When...two squadrons are made up of men and mounts which are equally experienced in war and equally well trained, the charge proceeds as follows - the ranks run at each other, the horses seek the intervals [*for Hellenistic cavalry this would be the three feet between each trooper mentioned above*] of their own accord, the riders engage in hand-to-hand combat, the forces are so completely intermingled that the two squadrons cross and emerge from the other's rear (117).

This tendency for equally matched cavalry units to interpenetrate one another is clearly a basic part of mounted warfare, no matter what the period. Given this the wedge had clear advantages over the square: its narrow front, its depth and the ease by which it could be manoeuvred by its officers. Finally, the psychological effect of a wedge charging a line would have been to induce individuals in the latter to shy away from the attack, further opening up and weakening the line formation.

Arrian records that a square was a good cavalry formation because it allowed a unit to hit the enemy in an ordered mass (118). The problem, however, would have been actually to strike the enemy at the same moment. Cavalrymen have always sought for this advantage, but because of the broken nature of terrain and the difficulty of maintaining the dressing of a line whilst on the move, it normally eludes them. The wedge did not suffer

from this problem. The tacticians make it quite clear that it would naturally maintain its formation whilst on the move, 'like a flight of cranes'. Added to this ability to strike in the proper fashion would have been the great manoeurability of the wedge, which would have allowed it to be directed at gaps in the enemy formation caused by sub-unit division and/or disorder.

The narrow frontage of the wedge would also have been an advantage (119). Officers were stationed at the tips of the wedge, and presumably the best troopers would have held a similiar position, clustered at the tips and along the leading edges of the formation. It was the case with infantry formations of the period that the most experienced men formed the front ranks, and this would also logically have been the case for cavalry (120). The compact nature of the wedge would have allowed a core of experienced soldiers to have been used to far greater effect than in a square, because the wedge had a shorter frontage and these experienced soldiers would have been more concentrated than would have been the case in a square. The narrow front of the wedge would also have had a disrupting effect on a square, assuming the given tactical situation was that both sides were charging at full tilt towards one another. As wedge struck square, those involved in the impact and subsequent *mêlée* would have slowed down, causing the wings of the square to continue. The tactical effect would have been to disrupt the square's formation and to isolate individual soldiers. Of course a tactical disadvantage might have been that the wedge would have been outflanked by the enveloping square. It would have been imperative, therefore, that the

wedge complete its work at speed and cause the enemy morale to fall to such a level that they broke in flight.

The wedge was also by its nature a deep formation (121). If one accepts the theory that cavalry battles were essentially open affairs with two units mutually interpenetrating one another, then depth of formation is a clear asset in the wedge. Quite simply, each soldier in the square would have had to pass more troopers in the wedge to emerge from the rear alive. The casualty rate in a square formation would have been far higher than in a wedge. This would be doubly the case if soldiers of higher calibre were deployed along the front edges of the wedge.

The shape of the wedge would have also given it an advantage in a *mêlée*. The effect of combat would have been uneven in the initial stages of a *mêlée*, when the wedge first entered the square. The effect of this would have been to disrupt, perhaps even 'burst open' the formation of the square. If this happened, then the square would have deteriorated into a swarm of individuals fighting against a proper military formation with all the consequences for mutual support etc. that this entails.

This theoretical picture demonstrates the marked advantages a wedge would have had in combat with a square. The square would have been ruptured in such a manner as to leave dead and wounded concentrated in a small area. The wedge formation - or formations, for, as will be shown below, Hellenistic cavalry would have launched such an attack with many *ilai* - would also have broken through to the rear of the line of squares, a

factor which, when coupled with the damage done in the fighting, would have seriously affected the morale of a line so penetrated. In addition, once through the line, the wedge would have been ideally suited to wheeling and attacking the flanks or rear of the enemy formation.

The morale effect of such an attack would have been vast, and a properly timed attack by a force in wedge on a line of squares would have been very difficult to stop. In short, the troops in square would have had great difficulty in surviving such an attack as a coherent military force. Indeed, the only possible counter to such tactics would have been to deploy one's horse in depth in an attempt to absorb the wedge attack, and in doing so the commander would have had shorten the line and face possible outflanking and envelopment manoeuvres in which the highly mobile wedge-formation excelled.

It is difficult to locate a reference from the sources - aside from the general information quoted above at note 112 *vis-a-vis* the open nature of cavalry warfare - to support the analysis above. Ancient battle accounts do not record the minutiae of the fighting. Tarn's comments on Alexander's cavalry attack at Gaugamela do, however, show the effect of a perfectly directed wedge attack (122). Tarn argued that Alexander carefully orchestrated the action on his right to prepare the Persian line for a cavalry charge. He drew out the enemy left by slowly feeding the flanking forces of the Macedonian army into action. The Persians as a result slowly thinned out their line as they attempted to outflank and envelope the Macedonian right.

At the critical moment Alexander released his *hetairoi*, a reserve of eight *ilai* of *élite* cavalry. Alexander led the charge personally, so important was the control of the timing of the attack, and the *hetairoi* tore through the Persian line, disrupting their army to such an extent as to bring about their eventual defeat. Gaugamela does not give us the detail of the action, but the effect of the *hetairoi* charge is very similar to the hypothesis presented above. It is clear that the wedge enabled cavalry tactics to step forward and gave the cavalry commander the ability to break the enemy line of horse in a decisive manner such as had never previously been possible.

The wedge was therefore a standard Hellenistic cavalry formation and it was ideally suited to breakthrough and exploitation. A series of wedges - normally formed by *ilai* or possibly *oulamoi* - would have been grouped together in a *hipparchy*. The manner in which this larger formation was deployed is of concern because it effects how wedges would have been used tactically.

Polybios addresses himself to this problem in his critique of Callisthenes (123). He records that a gap equal to the frontage of an *ile* must be left between *ilai* to facilitate manoeuvre. Polybios supports this in his section on Philopoemen's training programme for Achaean cavalry (124). He says that an advancing body of horse should take care to maintain the spacing between *oulamoi*, presumably for the same reason. Polybios also records that cavalry should attack by sub-unit and return to their respective *oulamoi*, *ilai* and *hipparchy*, indicating that sub-units maintained their station within the

organisational structure. No other source records the deployment of small units in such detail, but given Polybios' reputation in military matters, we can safely accept his evidence.

To summarise, Hellenistic cavalry probably used all of the formations their Classical predecessors had. They, however, developed the wedge, a tactical formation ideally suited to the mounted shock tactics of the period. In battle these wedges would have been formed by the smaller units of the Hellenistic organisational system. Inside the *hipparchy*, numbers of *ilai* would have been deployed, according to Polybios, in a rather loose, fragmented formation. This allowed them to utilise the advantage of manoeuvre that was the hallmark of the wedge. It also allowed a series of controlled charges to be launched and gave the *ile* a point to rally on and reform if it failed in its mission. This basic position defined, we can now proceed to battlefield tactics proper.

c) Battlefield Tactics

Earlier we discussed infantry tactics in the Hellenistic period and the conclusion was reached that infantry formed up in the centre of an army in essentially large and unwieldy blocks. Cavalry was usually deployed on the flanks of the infantry and used the phalanx as a solid base off which to launch attacks (125). Cavalry tactics were far more complex than those of the infantry since horse had to move fast and manoeuvre to be effective. Cavalry actions appear to have been over in a short period of time and thus attacks

had to be organised to a much greater level of competence if they were to be successful. We shall deal with battlefield tactics from the highest level, the deployment of entire wings, to the lowest, the use of small units. We will concentrate on the 'lancer', the main type of shock cavalry; more unusual troop types will be dealt with separately.

The first tactical decision facing the Hellenistic commander was how to draw up his mass of horse. Usually cavalry were placed on the wings of the army, which is entirely logical. Cavalry was the fastest troops of the period and one of their main missions was to outflank and envelop enemy wings. Deployment of horse in the centre of the army was rare, Sellasia and Magnesia being the only two recorded examples (126). Deployment in the centre was dangerous. Cavalry needs to charge if it is to be effective - it cannot hold a position like infantry. Cavalry deployed in the centre of the line might be forced to charge home on opposing troops, who were normally foot, and against they stood little chance of success.

Cavalry was normally distributed evenly to both flanks. Alternatively one wing could be weighted to gain local advantage, the most notable example of this being Gaza (127). A more common tactic to gain superiority on one wing was to concentrate *élite* units on one flank. Normally Hellenistic commanders followed Greek tradition, reinforcing the right with quality troops at the expense of the left. This often resulted in a 'revolving door' effect as each army's right was victorious and outflanked the enemy left. Gaza is a notable exception. Ptolemy and Seleucus acted on intelligence and

resolutely sought to oppose Demetrius' weighted flank with their own. They sought a decisive confrontation and prevailed, their action turning the battle in their favour (128).

At the simplest level, a cavalry wing would be deployed in a single line of units. Each wing would ride forward into action hoping to win the subsequent *mêlée* and - if the victorious horse could be rallied from pursuit - outflank the enemy phalanx. Hellenistic generals, however, enhanced their chances of success by using a series of special wing formations to gain tactical advantage. normally this involved advancing or refusing certain points of the wing.

A defensive formation used in the period was called the λοξὴ τάξις, a wing pulled back at an angle or refused. On occasion the formation was referred to as ἐπικάμπιον, or bent in, curved or crooked. This formation was used at Gaza where Demetrius held back his right to slow down the Ptolemaic attack (129).

The *loxe taxis* was usually only used on one wing, most Hellenistic armies designating one wing as offensive, the other defensive. At Gaugamela, however, Alexander used the *loxe taxis* on both wings (130). Further, Gaugamela stands out as an excellent example of the advantages accruing to the defender from the *loxe taxis* formation. It is normal to assume that refusal of a wing gained time by forcing the enemy to advance further to combat. This is, however, patently not the case. Especially with cavalry, the extra distance would only have added minutes to the advance of the

attackers. Rather the *loxe taxis* gave the defender the opportunity to disrupt an enemy advance, forcing him to realign his attack, and hence gaining appreciable time for the defence to influence the battle elsewhere.

A strength of the *loxe taxis* was that it made conduct of an outflanking manoeuvre by an enemy predominant in cavalry more difficult than would a line. Firstly, the *loxe taxis* could form a front facing an enemy flanking move, forcing a realignment of front by the attacking force. Secondly, the formation was especially well suited for the launching of small unit spoiling attacks. At Gaugamela Persian cavalry attempted to outflank Alexander's right. The Macedonians held the Persians with a series of counter-attacks launched by individual *ilai* within the *loxe taxis*. Despite an obvious disparity in numbers and the fact that this tactic only slowed the Persian attack, the Macedonian plan worked. Eventually the Persians had to commit so much of their mounted strength into defeating the *loxe taxis* and regaining the tactical initiative, that they weakened their line elsewhere, allowing Alexander the opportunity to break through their left centre with his *hetairoi*.

Another tactical ploy was to skirmish with the enemy on one wing, like the *loxe taxis* buying time for an attack elsewhere. This tactic was best conducted by light horse, of which more later, but a force of mixed cavalry types could skirmish on a grand tactical level if pressed. The best, and one of the few, examples of this tactical ploy comes from Gabiene (131). Antigonus confounded the attack of Eumenes' strengthened right by light cavalry supported by *xystophoroi*. This tactic was so successful that Eumenes had to

reinforce his right by drawing light cavalry from his left. Gabiene is noteworthy because it shows that in the right circumstances light horse, in this case Diodorus specifically notes the effectiveness of arrows in the combat, could confound Hellenistic shock troops.

A third tactic, and the most unsubtle, was to anticipate an enemy attack and simply ignore it. Throughout military history cavalry has been notorious in its inability to rally after victory. There are many famous occasions from outside the Hellenistic period where a battle has been lost by a victorious cavalry wing leaving the field in pursuit, never to return, with no thought of wheeling into the centre and attacking the enemy infantry from the rear. Tarn has used this general tendency to unfairly denigrate Hellenistic cavalry in particular (132).

Ipsus and Raphia are the best examples of this tactic in use (133). At both battles the commanders allowed the enemy to defeat their left. Note that on both occasions tactical ploys were used either to enhance the chances of victory - at Raphia a modification of the *loxe taxis* was employed - or nullify the defeat - at Ipsus, Seleucus deployed a chain of elephants to prevent the victorious Antigonid right from interfering in the centre. This tactic, despite the refinements referred to above, was very negative. It in effect cancelled out the cavalry of each army and placed the responsibility for victory to firmly in the hands of the infantry.

Several forms of the *loxe taxis* were also used in attack. The first was the reverse of the refused *loxe taxis*, a quite common formation (134). This

formation consisted of a line of *ilai* echeloned forward, one flank being anchored on the infantry centre. This oblique attack obviously lent itself to the rolling attacks in waves of *ilai* that was a speciality of cavalry in this period. It may also have made outflanking moves more effective. Finally, it was an obvious counter to the defensive refused *loxe taxis*, the two formations simply cancelling each other out.

The advanced *loxe taxis* could be formed by an entire wing or by sections of a wing. At Raphia the Seleucids deployed half of their horse on the right in line, adjacent to the infantry centre, half in *loxe taxis*, which formed the extreme wing of the army. The intention was probably to fix the enemy frontally with the line, then outflank with the *loxe taxis* (135).

Another variant was in effect a double advanced *loxe taxis*. This formation was used by Alexander at the Granicus river and it would have looked like a 'V' - the two arms facing towards, the point away from the enemy (136). This formation was composed of two chevrons - one with the left advanced, one with the right - placed side by side. At the Granicus the right arm of the 'V' was formed from seven *ilai* of *hetairoi*, led by the *ile basilike*, under Alexander's personal command. The left was composed of the *prodromoi* (four *ilai* of *sarisa*-armed light cavalry), the Paeonians, and was led by Socrates' *ile* of the *hetairoi*. That the two wings of the 'V' were led by *élite* units is of importance, their role probably being to keep the complex formation in order.

The formation served two functions at the Granicus. Firstly, it allowed

two rolling attacks to be launched, both under close supervision. Secondly, the left arm of the 'V' attacked first and although this assault failed it pinned the Persian line in place. A viable tactic for the Persians would have been to quit the river line after they had shot at the advancing Macedonians with javelins, and pull back onto the plain where their superior numbers would have been more telling. The 'V' formation, therefore, allowed Alexander to launch two rolling attacks, each of seven *ilai* of horse and each in close succession. Socrates' attack was repulsed, but it paved the way for Alexander's charge at the head of the *hetairoi*. This example demonstrates well how the *loxe taxis* enhanced the fighting potential of a series of *ilai*, each presumably in wedge.

The *loxe taxis* may have also been a vehicle by which columns of cavalry could swing out of the line and outflank the enemy. Two examples of this variant of the *loxe taxis* are Gaza and perhaps Raphia (137). At Gaza, Ptolemy and Seleucus reinforced their right upon receiving intelligence that this wing would bear the full brunt of Demetrius' attack. The battle opened with Demetrius launching his weighted left at the enemy. Diodorus records that Demetrius' cavalry was at least partially deployed *en echelon* and that the advance guards of the two armies engaged first, which may imply that the Ptolemaic horse were similarly deployed. Nevertheless, the fighting initially went Demetrius' way. Ptolemy and Seleucus then led part of their cavalry out of the line - presumably to hold a flanking position on Demetrius' engaged wing - and then attacked in depth and in a series of

charges which came eventually to fighting with swords, lances being shattered. The Ptolemaic forces prevailed.

A similar tactical evolution, noted by Galilli, may have occurred at Raphia. The Seleucid right deployed with half its horse in *loxe taxis*. These troops numbered 2,000 and may have been the Seleucid royal guard (138). The Ptolemaic left was pinned frontally by a similar force of 2,000 men in line, whilst the division in *loxe taxis* moved out to the right of the battle area. This force skirted a chain of foothills and fell on the Ptolemaic left, causing it to flee.

The similarity of these two incidents is obvious, but because of the confusing nature of the sources, difficult to interpret. The *loxe taxis* may have been used as a means by which a line of horse could rapidly form column, manoeuvre, and form line again. A reconstruction of events might be as follows; a *loxe taxis* of staggered sub-units was deployed on the flank of the cavalry line. These units turned forty-five degrees to form a line 'astern' facing out of the battle area. They then moved off, in column, one behind another until they began to outflank the enemy line. They then made another turn to face the enemy, presumably abreast, and charged. They were allowed to complete this manoeuvre without interference because in each case other units of their army were pinning the enemy frontally. Also the complex movement of such large numbers of horse was personally supervised by the commander-in-chief, respectively Ptolemy and Antiochus III. If this grand-tactical manoeuvre was carried out in good order and with

speed, then its effects on an enemy force already engaged frontally would have been devastating.

Finally, generals of the period occasionally used a reserve of cavalry. In one way reserves were a fundamental part of Hellenistic cavalry-tactics, with their use of rolling attacks, feeding fresh units into an already developed situation; here the writer refers rather to the use of a grand-tactical reserve, a substantial force of cavalry held uncommitted, to exploit success or check defeat.

Given the nature of cavalry, the advantage of a reserve is obvious. Horse do not slowly press forward to victory, rather they charge home and break through - or are repulsed - in a single rapid manoeuvre. Further, horses become tired if they gallop too long or too often, and it has always been difficult to rally horse who have been repulsed and send them back into action as an effective fighting force. In essence a general can use a fresh force of cavalry to turn the tide of battle.

In the Hellenistic period, the use of cavalry reserves was rare. The examples can be divided in two, those where the numbers involved were relatively small, not often more than five hundred men, and situations where larger forces were involved. At Gabiene Eumenes held three hundred select, fast cavalry in reserve. At Thermopylae Antiochus III held back five hundred horse - they only appear in the sources as part of the Seleucid army that escaped the battle - obviously they were never committed in what was essentially an infantry action. At Gaza Demetrius deployed two hundred

guard cavalry around his person, perhaps as a tactical reserve (139). In addition, the use of bodies of *élite* cavalry who fought beside their monarch was common in this period, though unfortunately we cannot be certain that these troops were held as a reserve. They were certainly used under the close supervision of the king, but often this entailed combat in the front line (140).

A larger reserve of cavalry appears at the battle of the river Axius where Antiochus II held a reserve of 2,000 cavalry. This Seleucid king may also have used a substantial reserve at Panion, perhaps the *hetairoi* and the *hypaspists*. At Asculum Pyrrhus deployed 2,000 cavalry in reserve (141).

The only detail of the commitment of a reserve comes from Gabiene, and note that Diodorus does not refer to the small body of horse mentioned above (142). At Gabiene, Eumenes' main attack had been stalemated by the actions of Antigonus' light horse, whereupon Eumenes relocated a body of light cavalry from his left and personally led them in a charge against the exposed flank of Antigonus' left. This instance shows the effect of an attack by fresh cavalry on committed forces. But it is not the use of a tactical reserve in the truest sense. Eumenes completed a grand-tactical redeployment, a very difficult procedure, but succeeded due to luck rather than judgement.

The use of reserves is rare and the sources suggest that Hellenistic commanders only resorted to this measure as a result of special circumstances or to hold a handful of cavalry uncommitted. Hellenistic commanders normally faced a tactical situation that would start evenly, but would develop rapidly. In set-pieces they normally deployed all their horse,

obviously to gain the maximum advantage in the initial clash of arms. On occasion they used small bodies of cavalry in a reserve position. These units would, one presumes, be committed to action to add extra impetus and clinch victory. The use of larger bodies of cavalry in this role appears only rarely, and often in odd tactical situations. The examples from Panion and Asculum deal with battlefields that were very congested. The generals could not deploy their full number of cavalry effectively from the start, so they held large proportions of the mounted strength in reserve. In actions where the battlefield was large enough to allow the deployment of the army's full complement, cavalry generals did so, for example at Raphia. The Axius river incident is also extraordinary, in that the Seleucid army was forcing a defended river line in the face of a surprise enemy attack. It is clear from Polybios' account of the action that Antiochus had to resort to emergency measures and that the cavalry was held as a shock force either to bolster the line should it begin to break, or to take advantage of any mistake made by the enemy. As it was, the latter occured, the Bactrian cavalry being halted by an *ad hoc* Seleucid infantry defence, and Antigonus led his cavalry to break the stationary enemy line and carry the day.

Generally Hellenistic grand tactics show a great degree of sophistication. They were designed to maximise the effectiveness of large numbers of cavalry on the battlefield. There were problems, of course, the major one being control. Throughout our sources, we are constantly reminded of the rapid nature of cavalry warfare and the need for good command and control.

evidence for small unit tactics is quite extensive and for once theory is supported by battlefield accounts.

The objective of small unit tactics in the Hellenistic period was gradually to escalate pressure on a very small portion of the enemy line. The tactical formations used in this period were specifically designed to this end. The wedge was intended to break through an enemy line at great speed and the organisational structure of the period was designed as a series of *ilai* within larger *hipparchies*. This facilitated attacks with waves of *ilai* so that the pressure on the enemy could be maintained over a period of time, instead of depending on a single charge. The system was also designed to allow small units to manoeuvre for maximum effect. Of course, there was a disadvantage in this tactical doctrine. It did not allow a single all-out attack to be made on the enemy line, as a more traditional charge *en haye* would have done. Hellenistic tactics sacrificed some of the shock of the charge for a prolonged pressure on the enemy and small unit flexibility.

There is evidence that Hellenistic cavalry was well trained in small unit tactics and their application to larger combats. Polybios records the training given to the cavalry of the Achaean League upon Philopoemen's election as *hipparch* (143). The individual horsemen were trained to wheel their horses to the left, right and to make full one-hundred and eighty degree turns. The drill was obviously intended to instil good discipline in horse and rider and develop basic equestrian skills.

Polybios also describes training in small unit tactics (144). He records a

series of wheeling techniques which were conducted by *lochoi* and *dilochoi*. Each is a wheeling drill whereby a cavalry unit could be turned though ninety, then one hundred and eighty degrees. The manoeuvre was carried out by sub-unit, not by turning individual troopers. Rapid changes of attack-axes and movements onto enemy flanks were the hallmarks of cavalry tactics in the Hellenistic period and Philopoemen's training would have stood his men in good stead in such an environment. Wheeling manoeuvres are difficult for cavalry to complete successfully, and it is noteworthy that Polybios records that the drill was completed by small sub-units, perhaps to ensure close control by junior officers in an attempt to prevent disorder in the face of the enemy. Use of the lower levels of organisation would also have improved the reaction times of cavalry formations, giving them a decisive edge in the fast moving combats of the period. The importance of this drill is indicated by Polybios' statement that such movements '...required no practice, as it was much the same thing as falling into marching order'. This may also indicate that this drill was standard Hellenistic practice rather than an invention of Philopoemen.

Polybios also records that cavalry should be able to charge and retire at speed whilst maintaining their formation. He stated that the distances between *oulamoi* should be maintained - which is repeated later in his critique of Callisthenes (145) - and emphasised the need to hit the enemy in a cohesive mass rather than in a series of dispersed units. Here Polybios appears to refer to a co-ordinated attack by a number of *ilai* designed to hit

the enemy at the same moment. This drill would concentrate the shock of the assault instead of allowing the attacker to maintain pressure by a rolling attack, which appears to be a more normal Hellenistic tactic.

Finally, Polybios describes a rolling attack by small units. He says that cavalry should be able to dash out from the centre or the wings - of a larger formation one presumes - by *dilochoi* and *lochoi*, attack the enemy and then rein in to return to their *oulamoi*, *ilai* or *hipparchies*. It is not clear whether Polybios refers to skirmishing or shock tactics here; other evidence (see below p.309) implies that the drill was used for both. On the one hand, he may be describing a system whereby the majority of the sub-units within, say, a *hipparchy* remained in reserve, as a support, whilst a number of sub-units sallied out to shoot missiles into the enemy line, returning to rest their horses and replenish weapons. On the other, this may be a reference to a rolling assault, such as the one already discussed at the Granicus (see above pp.285ff.), with a contingency for falling back to reform on supporting friends, should the attack fail. In each case, one presumes that sub-units moved in sequence to maintain a constant pressure on the enemy and to cover each other's retreat.

Another small problem with this evidence is Polybios' use of the smallest units in the Hellenistic organisational structure. If Polybios meant that this drill was used to launch hand-to-hand attacks on the enemy and that the tactic was commonplace in the period - both acceptable premises - then such small units would have been overwhelmed by larger numbers on an

eastern Hellenistic battlefield. It may be the case, therefore, that Polybios writes in the context of Philopoemen's reform, but implies a wider use of the tactic. In Greece the *dilochos* and *lochos* may have been of an effective size due to the generally small numbers of cavalry used in that region. In the east, however, the units used for this tactic simply needed to be scaled up to *ilai*. This is acceptable - afterall many authors would argue that a *dilochos* was an *ile* (146).

Polybios, therefore, presents two forms of cavalry attack, one all-out, a mass of horse striking the enemy at the same moment, the other a series of attacks to maintain pressure. The latter may also refer to skirmisher tactics, as will be discussed later. Over and above these conclusions, however, are three more fundamental principles of cavalry warfare in the Hellenistic period. Firstly, that cavalry must be properly organised and trained to maintain formation if they are to be effective. Secondly, the organisational structure used in the period allowed horse to be rapidly manoeuvred and deployed to gain maximum tactical advantage. Thirdly, the importance of supporting units which protected attacking sub-units and helped to maintain pressure on the enemy line. He summed up these principles by saying, '...just as a building will be solid if each brick is laid with care, so in an army it is the careful instruction of each man and each company which makes the whole force strong.' (147).

No other source details training in this period, but there are many references to cavalry in action that support and elaborate on Polybios'

evidence for the manoeuvrability of the cavalry of the period. Dionysios of Halicarnassus compares the Greek and Roman cavalry tactics used at the battle of Asculum in 279 B.C. (148). On the one hand, the Romans fought like infantry, reining in and fighting stationary hand-to-hand combat. On the other, the Greeks employed flanking and deploying manoeuvres. Dionysios records that the Greeks would break away from combat whenever the fight was going against them. They would swerve to the right, countermarch past one another and throw themselves anew onto the enemy line. It is clear from the narrative that the Romans were not capable of employing such complex tactics. Here is evidence for the rapid redeployment of horse in an attempt to outflank or set up new axes of attack. Faced with such tactics, relatively static troops, such as the Romans, were at a severe disadvantage.

Similar tactics were used, according to Quintus Curtius, by Thessalian cavalry to thwart an attack by Persian cataphracts at Issus (149). The heavily armoured Persians charged and rode down an *ile* of Thessalians. The Thessalians, however, were able to redress the situation by manoeuvre. They wheeled their horses round, split up and returned to the attack. The Persians were disordered by their charge and handicapped by their heavy armour, and were defeated. Curtius does not record the episode with the detail of Dionysios's account of Asculum, but the tactics are essentially the same. The Thessalians were capable of out-manoeuvring a more cumbersome enemy.

An example from Livy also highlights the manoeuvrability of Hellenistic cavalry (150). In the fighting around the Aoos pass Livy records an

encounter between two mixed forces of cavalry and *psiloi*. He says that the Macedonians expected the fight to follow an accustomed format, with cavalry alternating between advance and retreat, discharging their weapons at the enemy. In the intervals Cretan archers would cover the cavalry with their arrows. The Romans disrupted this tactic by simply launching an all-out charge and as a result they defeated the Macedonians. Here Livy probably refers to skirmishing tactics and it is noteworthy how similar his evidence is to that of Polybios discussed above.

Finally Polybios' account of the fighting at the Axius river is noteworthy because it may show the employment of waves of *hipparchies* - demonstrating that the general doctrine of rolling-attack could be employed at a level higher than the *ilai* - together with small unit defensive tactics (151). The Bactrians launched such an attack on a mixed line of Seleucid cavalry and infantry. The Bactrians failed to break the enemy line and were eventually defeated after a charge of 2,000 Seleucid cavalry which had been deployed as a reserve. Polybios does not give details, but it may be that the small units, called *oulamoi*, fought a delaying action using small unit attacks, much as Alexander's right did at Gaugamela. It is also noteworthy that the large scale Bactrian charges, by *hipparchies*, failed against a mixed, flexible and co-ordinated defence.

The evidence, therefore, indicates that a general tactical system was employed at small unit level in the Hellenistic period. Rapid manoeuvre and realignment of attack was the order of the day in an attempt to catch enemy

formations off guard. The maintenance of a local tactical reserve was also critical to cover movements of the *ilai* within the *hipparchy*, and to provide a local commander with the strike-force needed for rapid exploitation of any enemy weakness created by his formation's attacks. Against a stationary enemy, such as the Romans at Asculum, or an enemy who was disordered or too heavily equipped, such as the Persians at Issus, these tactics were very successful. On other occasions, where the enemy was prepared to make a bold and decisive charge, for example the episode at the Aoos mentioned by Livy, the tactics were not so successful. One might, however, speculate as to how such an aggressive charge would have worked on an open battlefield against large numbers of enemy, for example in the eastern part of the Hellenistic world. One might guess that such a charge would have been blunted by the Hellenistic system of manouvre and its own success, much as happened to the Persians at Issus.

The evidence also demonstrates how Alexander might have employed his horse on the right of his army at Gaugamela. This work has already touched upon this incident as one clear example of Hellenistic small unit tactics applied to a larger battle. Alexander's cavalry could have used the tactics outlined by Polybios, firstly to cover the right flank of the advancing Macedonian army, and, secondly, to ensure that the charge of the *hetairoi* was decisive. Furthermore, similar small unit tactics would have been equally successful in the later Hellenistic battles, discussed above in the section on large battle formations.

The formations used by Hellenistic cavalry, discussed above, lent themselves well to these tactics. The wedge and rhomboid were ideal formations for rapid manoeuvre and decisive hand-to-hand combat. The organisational system employed in the period allowed small units, firstly, to conduct their operations with flexibility; secondly, to act under the control of a higher officer - a *hipparch* - who had under his control a body of horse of such a mass as to make a substantial hole in the enemy line should the opportunity arise. Finally, the cavalry of the period was deployed in grand-tactical formations that were specifically designed to enhance small unit tactics and allow them to be delivered with the maximum chance of success.

Polybios records a maxim of Philopoemen, that there was nothing more dangerous than a disordered and fragmented cavalry formation (152). In this regard Hellenistic cavalry held a precarious middle position, with a fragmented front to enable manoeuvre, which might, if improperly handled, cause Philopoeman's fear to become reality. The use of manoeuvre, however, made this dispersed formation very strong - if order and control could be maintained. The sources demonstrate that Hellenistic cavalry fought in a manner whereby each *ile* supported another. Against such tactics, a more compact enemy formation could be enveloped - even if, as at Issus, some *ile* had been ouflanked and very badly handled by the enemy. Of course, the key word here is control. Obviously disorder would have severely reduced the effectiveness of a Hellenistic cavalry formation. It is noteworthy, however,

that Polybios shows how well trained and disciplined the cavalry of Philopoemen was. If this was common in the period, then commanders took measures to combat disorder and maintain formation.

e) Light Cavalry Tactics

Up to this point we have discussed the tactical methods of mounted lancers, soldiers that made up the majority of the shock cavalry of the period. Light cavalry was very much an auxiliary arm on the Hellenistic battlefield, its main military role being strategic. There are, however, enough instances where light horse did fight in set-piece actions to merit some discussion of their tactics.

The tactical writers could not divide cavalry functions as easily as they could infantry. Asclepiodotus wrote that there were three types of cavalry. The first group were all those who fought at close quarters, lancers and cataphracts. Both of the other types appear to be light cavalry, one fighting at a distance as Skythians - obviously a general ethnic term denoting horse-archer - the other an intermediate type equipped with javelins or, paradoxically, bows! Asclepiodotus further sub-divides the latter into horse-archers operating on an army's flanks, and mounted javelinmen who might be armoured and form an intermediate type. Finally he sub-divides the mounted javelinmen into those who fought at close quarters, *ελαφροί*, and those who fought at a distance, whom he calls 'Tarentines'. To simplify Asclepiodotus' confusing account there were two types of light horse, those

who shot from a distance and those who could close for combat, with mounted javelinmen predominating in the latter category (153).

Aelian's division of mounted types is somewhat clearer than Asclepiodotus' (154). The lightest cavalry were ἀκροβολισταί and were equipped with either bow or javelin. Aelian follows Asclepiodotus in recording a series of sub-groups of *akrobolistai*, cavalry equipped with the javelin (δόρυ) being termed 'Tarentines', those with bows 'Skythians' or *hippotoxotai*. He further divides the 'Tarentine' class into those who shot and those who could close for combat.

Arrian's division of cavalry is much the same as Aelian's (155). He adds, however, two examples to illustrate the *akrobolistai* class, Armenians and those Parthians who did not fight with the lance, both familiar enemies on Imperial Rome's eastern border. He also records a series of sub-types of light horse beyond archer and javelinmen. 'Tarentines' were soldiers who frustrated the enemy from afar, who could ride close together in a circle shooting constantly at the enemy. *Elaphroi* were cavalry who skirmished with the enemy, with javelins, and could close to hand-to-hand combat - despite an earlier assertion that *akrobolistai* did not enter close combat. Arrian then goes on to detail Roman cavalry techniques, obviously those of his own time, the second century A.D.

The tacticians provide a frustrating plethora of light cavalry sub-types and often confuse the modern reader with their role in battle. They do, however, agree on several broad points. Light cavalry were equipped with

either the bow or the javelin. Some of the mounted javelinmen could enter close combat, whereas horse-archers only shot at the enemy from a distance. Historical accounts of light cavalry in action demonstrate the veracity of these broad points and that an exhaustive discussion of the minutiae of the tacticians' various sub-types is unproductive.

Of all the light cavalry types discussed by the tacticians the horse-archer is by far the easiest to isolate in battle accounts. This type of soldier was common in the ancient and medieval world. The horse-archer originated on the Steppes and became the mainstay of armies originating from that area. Horse-archer tactics were well known to the ancient Greeks. Herodotus describes them as rapid advances and withdrawals, tactical envelopment, feint, ambush, hit-and-run attacks on columns and so on (156).

Horse-archers, normally mercenaries, were used by Hellenistic armies from the time of Alexander onwards. They are mostly found in the armies of the factions or states that occupied the middle and near east, the area bordering the Steppes. Alexander used horse-archers as scouts or, as at the Hydaspes, as an advance guard (157). Antigonus Monophthalmus may have used horse-archers on his right at Gabiene. This wing was ordered to skirmish with and envelop the opposing flank. In the fighting some of Eumenes' elephants were shot down by arrows. Diodorus does not record which Antigonid contingent carried out this action, and both foot and horse-archers were deployed in that sector of the battlefield. The course of the battle suggests, however, that the Antigonid threat was horse-archers. As

Eumenes' right was overburdened with horse and elephants, it can be assumed that these troops could have neutralised a foot-archer threat. Mounted bowmen, however, may have been able to evade direct attack and it was perhaps this that forced Eumenes' to bring light cavalry from his left to redress the situation (158).

The Seleucid use of horse-archers is documented by Polybios and Livy. Polybios records the Skythian Dahae tribe as part of the Seleucid order of battle at Raphia where they were associated with Carmanians and Cilicians. Their station in the battle is unknown, but it may be assumed they stood with the Carmanians and Cilicians, on the extreme left of the Seleucid line. There is no record of their tactical role in the battle. Livy also notes that this tribe served with the Seleucid army. He records that they could shoot as well in retreat as in the advance, clearly a reference to feigned flight, a tactic known popularly as the 'Parthian shot'. Livy also notes that Skythians held the extreme Seleucid right at Magnesia, and they may have enveloped the Roman left, perhaps breaking through to the enemy camp (159).

Paucity of evidence means it is only possible to draw general conclusions about the role of horse bowmen in the Hellenistic military system. Firstly, this troop-type was not widely used, being confined to armies with access to central Asia. Secondly, one can envisage a major role for such troops in strategic operations. The tactics of the horse-archer would have been ideally suited to raiding, scouting and so on. The sources, unfortunately, only refer to such operations in Alexander's wars. Thirdly, the horse-archer had only an

auxiliary role on the battlefield. Extant references point to harassment of cavalry advances, such as at Gabiene, that could be easily countered by suitably equipped troops. Envelopment of an enemy wing - an example may be Magnesia - was also the province of these soldiers. There is not, however, a major horse-archer victory in the period, such as Carrhae. Evidently the combined arms tactics of the Hellenistic military system lent themselves well to countering the peculiar tactics of the horse-archer and the troop-type never assumed the prominence it achieved in other periods.

Evidence for the use of the mounted javelinman is more common in the period. The majority of references are to strategic operations, which could be conducted by most of the cavalry types in a Hellenistic army. Evidence for the use of mounted javelinmen on the battlefield is rarer.

Polybios made a comparison of Thessalian and Aetolian cavalry (160). He records that the former were irresistible in phalanx or *ile* - that is in closed, ordered formations - whilst the latter were experts in dispersed warfare. Livy supports this assertion, noting that the Aetolians were the best cavalry in Greece, although their numbers were small (161). Clearly Polybios refers to a body of cavalry who were the leading exponents of light cavalry tactics in Hellenistic Greece, a factor that might explain why they appear in so many armies of the period. He further illustrates his assertion in describing the action at Caphyae, an encounter in which Aetolian cavalry played a major part (162).

Caphyae was a rearguard action fought between a retreating Aetolian

raiding force and a pursuit force of the Achaean League under Aratus. The battle needs examination in detail if the role of the Aetolian light cavalry is to be fully understood. Polybios describes the battlefield as a plain bounded by a series of hills, which became the objective of the retreating Aetolians. The battle started as the Achaeans encountered the Aetolian column spread out on the plain as it marched towards the line of hills, its rear screened by cavalry. Upon sighting the enemy, the Acheans despatched a mixed force of *psiloi* and cavalry to harass the column, meanwhile deploying their main force for action. Polybios criticised this, believing Aratus' best course of action would have been to attack the Aetolians with his main body right from the outset. He records that the Aetolian tactics and armament were unsuited for fighting on the plain, implying light armament for both their infantry and cavalry. Despite Polybios' comments, the initial stages did not produce a check for the Achaeans, whose *psiloi* forced the Aetolian cavalry back into the foothills. Here the battle entered its second phase.

The Achaeans fed more infantry into the combat - mostly semi-heavy troops or *thorakitai* - and deployed their phalanx in support. The advance of these fresh troops prompted an immediate reaction from the Aetolian cavalry, who massed in close-order and charged. The attack struck the Achaean advance guard first and it fled. The Aetolians followed up this success and eventually the *thorakitai* and the phalanx were carried away in the rout.

Polybios' description of the Aetolian cavalry at Caphyae fits closely the tacticians' intermediate light horsemen who could both skirmish and engage

in hand-to-hand combat. Initially they screened the rear of their army in classic light cavalry style, but when the opportunity arose, they were able to form up and charge, carrying away the bulk of the enemy force.

Other evidence for the period supports this dual role. In Philip V's western campaign of 219 B.C., Aetolian cavalry caught a force of Macedonian peltasts crossing a river, but despite their obvious tactical advantage the Aetolians simply observed their enemy, again much like the classic light cavalry picket (163). It is noteworthy, however, that Philip took precautions to protect his men by forming his peltasts in *sunaspides*, implying he feared an attack by the Aetolian vedettes. The role of the Aetolian contingent at Cynoscephalae also supports this dual role (164). Livy records that the initial skirmishing was won by the Romans largely due to their Aetolian horse. According to Polybios it was the Aetolian cavalry which steadied the Roman line and prevented a general rout in the initial stages of the battle. He states that the Aetolians were superior to any other Greeks in single or detached combat - a reference to light cavalry combat. It can be assumed that the Aetolians formed part of the Roman left in the main part of the battle, a sector of the Roman line that came under heavy pressure from the Macedonians.

Other cavalry may also be of this intermediate type. Livy records how Illyrian and Macedonian cavalry lost a skirmish because they entered combat without shields, armour or swords. The implication being, firstly, that these items were normally used and, secondly, that in this instance some other

offensive weapon was carried - perhaps their skirmishers' javelins (165).

The *prodromoi* of Alexander's army may also be an example of light horse who were able to engage in hand-to-hand combat (166). The *prodromoi* have been the subject of many academic arguments regarding their tactical function and equipment, but they were probably equipped with the *sarisa* and performed both scouting and combat missions. The clearest evidence for their dual role are the events leading immediately to and the battle of the Granicus river. The *prodromoi* formed part of Alexander's advance guard during the approach to the river, and part of the right wing upon which Alexander placed his hopes of puncturing the Persian line. The dual role of these soldiers is clear, but some scholars have had difficulty reconciling the lance with light horse. Quite simply this is not a problem. The lance has been a light cavalry weapon throughout history, for example the famous Cossacks of the Russian army.

These references give credence to the tacticians' intermediate mounted javelinman, able to fight from a distance or close in. It may be that in the case of Aetolian light horse, they were equipped with armour, which would have aided them in their close-action role. This does not diminish the probability of the existence of a light cavalry type that shot and rode into combat; it merely underlines the foolishness of equating tactical function with weight of equipment alone.

Given that some javelin-armed - or *sarisa*-armed in the case of the *prodromoi* - light cavalry in the period could fight at close quarters, what of

the shooting tactics employed in the period? Hellenistic cavalry may have used a drill to co-ordinate shooting by formations of light cavalry. Polybios' record of a drill for sending forward small units and recalling them to a main body has been discussed with reference to hand-to-hand tactics (see above pp.295ff). There are other instances in the period that show this drill may have been used for shooting. Livy records that at the Aoos pass, Illyrian and Macedonian cavalry were surprised at the aggressive tactics used by the Romans (167). He says that they expected the combat to be as normal, with cavalry alternately advancing and retreating. He records that they also expected close support from Cretan bowmen, and refers to a final rapid charge by the Illyrians, perhaps a close quarters attack on an enemy weakened by shooting. Livy's description of this action is very similar to the drill designed by Philopoemen and recorded by Polybios. It may have been standard tactics in the period; hence Livy's reference to Philip's cavalry expectation that the action would follow a set pattern.

Such a drill would have been very effective, making a skirmish a confrontation between formed bodies rather than swarms of individuals. Hellenistic light horse were numbered by the thousand, and co-ordinating such large numbers would have been a major feat of arms. The drill described by Livy and Polybios would allow mounted javelinmen to maintain a constant pressure on an enemy line, whilst allowing the skirmishing cavalry time to reorder their line, replenish weapons and rest their horses. Furthermore, Polybios refers to the importance of maintaining a reserve and

Livy implies that the commanders of the period would have expected such a force to fall on the enemy at the correct moment, turning a skirmish into a breakthrough. Once again the organisational structure and the Hellenistic penchant for training and tactical doctrine shows through in light cavalry warfare. A system for maximising the effectiveness of light cavalry appears to have been commonplace at least in Greece in this period.

Arrian records another shooting formation, a circle, that may have been in use in the period (168). He describes a drill whereby light cavalry rode around in a continuous circle. They presented a moving target to the enemy and could discharge their weapons at one point of the circle, thereby shooting a sustained, heavy barrage of missiles into a small sector of the enemy line. It is possible that Arrian refers here to contemporary tactics in use by the Imperial Roman army, but it is also possible that Hellenistic light cavalry used the shooting circle.

Other detailed references to pure skirmishing light cavalry do not appear in the sources. The sources refer to various nations in orders of battle which might be mounted javelinmen, but there are no details of their performance in battle. Arguments *e silentio* must of course be applied with caution, but the activities of light cavalry would not have been of great interest to the ancient writers. Their role would have been harassment and so on. The battlewinners of the cavalry arm were the lancers - and the cataphracts as will be discussed below - and thus the troop-type under discussion does not find its way into battle accounts. The sheer number of references to those

various ethnic groups which traditionally consisted of mounted skirmishers, and the basic nature of the tactics and equipment used, support the conclusion that the pure javelin-armed, mounted skirmisher was a common-troop type in the period. This troop-type undertook many important responsibilities in the strategic sphere, but due to the nature of its equipment was not decisive in set-piece battles.

The tacticians record one other type of light cavalry, the Tarentine (169). Tarentine cavalry appears in many of the armies of the period, but the troop-type is very difficult to define and has been the subject of great academic debate. The evidence of the tacticians suggests that Tarentines had special equipment of some kind - for example, Arrian records that they had swords in addition to missiles. Livy adds other evidence, writing that they used two horses, a feature not unknown in ancient warfare, but rejected by Griffith (170). Alternatively, they may have been light horse equipped with a shield (171). Launey argued that they were cavalry equipped with javelins who were specially trained to harass the enemy, but also noted that they were prepared to engage in hand-to-hand combat and as such should be included in the intermediate type discussed above (172).

The origin of the type in the Greek city of Tarentum in Italy is regarded by scholars as significant. Originally the type would have been specialists equipped and fighting in a particular way. As time went on, the title came to refer to a specific form of light cavalryman, rather than a native of Tarentum (173). Scholars argue that either Pyrrhus or Antigonus Monophthalmus

introduced the type into the mainstream of Hellenistic warfare.

An understanding of this troop-type is not greatly enhanced by battlefield accounts. Antigonus used a force of 2,200 Tarentines in his war with Eumenes, and deployed them alongside other cavalry on his left at Gabiene, the intention being to skirmish with the enemy; unfortunately Diodorus' account of the fighting is not detailed (174). This general skirmisher role is also hinted at by the positioning of Tarentines at Panion (175). They were deployed in concert with elephants as a screen for the Seleucid phalanx.

At Magnesia the Seleucids deployed Tarentines on their left, together with their main cataphract force (176). Once again we can only infer their role, the Seleucid left being defeated very early on in the battle, and perhaps they were to screen or support the cataphracts. Demetrius used Tarentines in a similar position at Gaza, deploying them in concert with his *xystophoroi* (177). Once again no detail of their role in the fighting has survived.

Tarentine cavalry were a common feature of the armies of the Hellenistic Greek states, and their inclusion in the mounted forces of the noted 'cavalry states' of Aetolia, Boeotia and Thessaly is of importance (178). Many of these soldiers were mercenaries, prompting the conclusion that the title applied to hired, rather than native light cavalry, in the later part of the Hellenistic period. Indeed, the tacticians refer to an unit called a *tarantinarchia*, perhaps a self-contained mercenary unit for hire (179). This is tentatively supported by epigraphic evidence which refers to a 'commander of Tarentines' as a military appointment (180).

There are three major references to Tarentine horse in action in Greece in this period. The first comes from the Diadochi Wars, where Demetrius ordered Tarentines to pursue the army of the Athenian general Phocion, a typical light cavalry operation (181). Both the Spartan and Achaean armies used Tarentines in the campaign of 193 B.C. Livy records an encounter between Tarentines and Cretans - *psiloi* archers - of the two armies (182). They fought for some time, then the Achaeans retreated, luring the Spartans into a pre-planned ambush. This reference implies that Tarentines were trained for close combat, although it must be noted that no heavy troops were involved in the action.

Finally, Polybios records that Tarentines fought on both sides at the battle of Mantinea in 207 B.C. (183). The Achaeans deployed their Tarentines on their left flank and they were used to neutralise the Spartan artillery line that threatened the Achaean centre. Unfortunately Polybios does not say whether they were used as skirmisher or close-combat troops, but either tactic would, surely, have disrupted the lightly equipped artillerymen of the period. Of more interest is the role of the Spartan Tarentines. Polybios' account is very general, describing an attack by the Spartan cavalry and mercenaries. Plutarch, however, adds more detail, recording that Machanidas and his men routed the enemy Tarentines and *akontistai* who had been deployed in advance of the Achaean line (184). Again the evidence shows that Tarentines could be used as close-combat troops, at least against light armed opponents.

Tarentine cavalry therefore appears to be very close to the intermediate light cavalry type that could skirmish and engage in hand-to-hand combat. They may have been specially equipped for this role - reference has been made to the use of two horses and perhaps shields. The distinctive feature of this light cavalry type appears to be their use as separate units, probably as mercenaries, and their high quality.

Finally a tactic common to the period was the use of light cavalry and *psiloi* in close connection. This has been discussed in full above in the chapter on *psiloi* (see pp.200ff). Suffice it to say here they each arm was ideally equipped to support the other and that this co-operation demonstrates again the sophisticated tactical systems in use in the period.

To conclude, in the Hellenistic period light cavalry were used in both the strategic and the tactical fields. In the former they operated as scouts, raiders and so on. On the battlefield they contributed to victory by screening heavier troops and performing outflanking operations. These activities had always been the province of such troops, but in the Hellenistic period they were incorporated into a complex military system which was composed of all-arms. In short light cavalry in this period were deployed to enhance the other parts of the army. Light cavalry were not devastatingly effective on their own - as were for example the horse-archers of Turkish or Parthian armies - rather they gave other cavalry and infantry an edge on campaign and in battle that would eventually lead to victory. In order to achieve this objective, Hellenistic generals deployed a special type of cavalryman, willing

to enter close combat, to supplement the more traditional mounted skirmishers. In those Hellenistic armies weak in cavalry, such as those of Greece, this innovatory horseman may have formed the mainstay of their mounted arm. Hellenistic light cavalry do not assume a leading role in the sources, such a position was reserved for the decisive combat arms; but they did enhance the military potential of the armies of the period.

f) Cataphracts

Cataphracts were not a Hellenistic innovation: they are encountered in Oriental armies before the period. The period did see, however, this troop-type integrated into Graeco-Macedonian military systems for the first time. The equipment of the cataphract has already been discussed: suffice it to say that these troops were heavily armoured, both man and horse. Their tactical role was to supplement the more common Hellenistic mounted lancer, as charging, close-action cavalry. Only the Seleucid army used cataphracts in large numbers in two battles late on in the period. By necessity, therefore, much of the following discussion is conjectural and based in part on evidence from outside the Hellenistic period. Despite this, however, one general point can be made with confidence. The cataphract was of Oriental origin, but was a logical extension of Hellenistic cavalry tactics. Armies of the period used cavalry as an offensive tool to open up the enemy line as a preliminary to victory. The heavy equipment of the cataphract simply added more weight to this initial phase of battle (185).

The tacticians believed catapracts were the heaviest type of cavalry employed in the period (186). They record evidence for the equipment used by this troop-type, but beyond references to their being close-combat troops they make no reference to cataphract tactics. Historical references to cataphracts are more informative on this point.

Alexander faced Persian cataphracts at the battle of Issus (187). These soldiers were deployed on the Persian right and they launched a charge on Alexander's Thessalian cavalry. Initially the Thessalians were ridden down, but they were able to recover and counter attack, out-manoeuvring the Persians and defeating them. Cataphracts appear here as powerful but unwieldy troops. Darius also used cataphracts at Gaugamela, where they formed part of the Persian left (188): they were drawn from his central Asian satrapies. However, the sources do not record the role of these armoured cavalry in detail. The Persian plan appears to have been to envelop the Macedonian right with this force, but this movement was countered and eventually neutralised by a series of charges in *ile* strength by Alexander's flanking force. In might be inferred that once again cataphracts failed against an enemy who used superior tactics of movement and manoeuvre.

The Seleucid army used cataphracts at the battles of Panion and Magnesia. Polybios' account of Panion is a critique of the incompetence of the historian Zeno with regard to military matters and is, as a result, very confusing (189). Bearing this in mind, the Seleucid cataphracts were stationed on a hill to the right of their infantry centre. They appear to have

been opposed by a weak detachment of Aetolian cavalry. The cataphracts charged the Aetolians, swept them from the field early in the action, and rode off in pursuit. The cataphracts returned from their pursiut later in the day and their appearance to the rear of the Ptolemaic centre caused it to surrender. This example does not enlighten us as to the capabilities of cataphract cavalry in the period. The cataphracts charged from a superior position into a weak opponent. The Aetolians do not appear to have manoeuvred to counter the attack, a tactic at which they were expert. In short the breakthrough could have been achieved by any heavy Hellenistic cavalry.

The role of the Seleucid cataphracts at Magnesia is also open to different interpretations (190). The Seleucids deployed a large force of cataphracts in two contingents. The first was 3,000 men strong and formed part of the left cavalry wing. The other held a position in the centre between the main phalanx and the *sarisa* armed *argyraspid* guardsmen. This force was composed of 3,000 'line' and 1,000 *élite agema* cataphracts

The Seleucid left put up a very poor showing, their advance force of chariotry and camels being put to flight by Achaean peltasts and *psiloi*. The chariots and camels fled back through the Seleucid cavalry line, disordering it to such an extent that it could not resist a very aggressive Roman cavalry attack and fled from the field. Livy and Appian do not detail the role of Seleucid cavalry in the centre. They record an attack on the Roman camp by horse, but identify the force as the Dahae who had stood on the extreme Seleucid right. Many modern scholars have accepted this account, but

Bar-Kochva believes that it was the cataphracts of the Seleucid centre who attacked the Roman camp. This belief is based on the account of Justin and an argument that Livy sought to conceal such a Seleucid success for patriotic reasons.

Other factors besides Justin support Bar-Kochva's analysis. The positioning of such a large force of cataphracts as part of the Seleucid centre is of importance. The river Phrygios closed off the Seleucid right, making that wing unsuitable for use by large numbers of charging horse, but Antiochus chose to deploy a major force of cavalry as part of his infantry centre rather than using it to bolster his left. His intention must have been to attempt to break through the Roman line opposite, formed of legionaries, with a frontal charge. Such a feat would not have been beyond the capabilities of 4,000 cataphracts, 1,000 of whom were *élite* troops. The Roman legion of the period was ill-equipped and trained to face a massed cavalry attack. It was deployed in a 'chequerboard' formation with gaps between each maniple. Furthermore, the legionaries were trained and equipped to fight as swordsmen. They fought in loose order, perhaps occupying as much as six feet per man. Only the *triarii*, about one fifth of the legion's heavy infantry strength, were equipped with a long spear. The *principes* and *hastati* fought with *pila* and sword, neither weapon being effective weapons against cavalry (191). If Bar-Kochva's interpretation is correct, then Magnesia was the high point of cataphract tactics in the Hellenistic period. The charge would have burst through the best part of an

entire legion to attack the camp, a feat of arms with few parallels in military history.

To conclude, the sources only record cataphracts in use by the Seleucid army, and they probably adopted the troop type after Antiochus III's central Asian campaign of 210 B.C. These soldiers were very heavily armoured, both man and horse, and they probably fought with the lance. Cataphract tactics were simple, a frontal charge at which they excelled. This is best demonstrated by the charge by Seleucid cataphracts at Magnesia which possibly shattered a Roman legion. They were vulnerable when faced by an enemy adept at the manoeuvre tactics which were an integral part of Hellenistic cavalry warfare. It is significant, therefore, that the Seleucid army used as cataphracts a special arm alongside a strong force of lancers. In the post-Hellenistic period cataphracts remained part of the armies of the Orient and were later adopted by the Roman army.

## F) Conclusion

Philip II's introduction of aggressive cavalry tactics into warfare in the mid-fourth century was a major step forward in the military art. Philip grafted Greek and Balkan innovations in mounted warfare onto Macedon's native cavalry tradition to create a formidable battlefield strike force. This invention changed the face of battle at once; when married to the defensive strengths of the Macedonian phalanx, Philip had made obsolete all the

military systems of the Mediterranean world. The effectiveness of the combination of massed infantry and aggressive, attack-cavalry allowed Macedon to dominate first the Greek city-states, then the powerful Persian empire. The cavalry traditions set by the armies of Philip and Alexander were carried on by the Diadochi and cavalry remained a major force in Hellenistic warfare until the final eclipse of the phalanx-cavalry combination at the hands of the manipular legion. Further, even in the later Hellenistic period, cavalry remained a potent battlefield force, as the victory of the Seleucid cataphracts at Magnesia possibly testifies. This long period of success was the result of two factors, the creation of a tactical system specifically designed for decisive attack, and the linking of cavalry warfare into the complex all arms-system that was the basis for Hellenistic warfare.

In the former case, a series of inventions and innovations were introduced into cavalry warfare that changed horse from battlefield skirmishers to a force capable of breaking the enemy line. These inventions and innovations spanned all aspects of warfare, from equipment, through small unit tactics, to grand tactics. A complex organisational system was introduced and soldiers trained and drilled in these radical tactical systems to create a shock force of outstanding effectiveness.

The equipment of the Hellenistic cavalryman emphasised close action. He was equipped as a lancer and armoured. More importantly, however, a system of small unit tactics that emphasised manoeuvre were introduced, to maximise the effectiveness of this equipment. Cavalry battles at the tactical

level became fast moving hit-and-run affairs, with *ilai* of horse wheeling and realigning attack-axes to gain maximum advantage. In order that *mêlée* be decisive, the wedge was introduced to give Hellenistic cavalry commanders an assault formation that could tear through an enemy line in as short a time as possible, and with maximum damage inflicted on enemy units. Once broken apart, the enemy would fall foul of the manoeuvrability of the small units of a Hellenistic cavalry force, and initial success could be rapidly exploited to turn local victory into overall success.

On a grand-tactical level, a series of battle formations were employed once again to enhance the small unit effectiveness of the Hellenistic tactical systems. Commanders could weight a cavalry wing with numbers and special combat formations. The various *loxe taxis* formations ideally illustrate this point. Commanders could, with skill and forethought, deploy their cavalry forces and operate them in a sequence so as greatly to increase the effectiveness of their initial attacks. Here the best example is Raphia, where the Seleucids pinned the enemy frontally with half of their right wing, whilst they out-flanked the enemy with the other half of their force deployed in *loxe taxis*.

The Hellenistic cavalry system emphasised aggressive attack, as should any military system that utilises large forces of rapidly moving and hard hitting troops. Cavalry is a formidable, yet brittle weapon. Horses easily become tired and their combat formations are difficult to maintain in good order when subjected to the stress of battle. More importantly, cavalry must

move forward to be effective; it cannot hold ground like infantry. This means that cavalry has to complete its tactical mission in as short a time as possible and with maximum effectiveness. Commanders with inferior forces of cavalry attempted to draw out combat and slow down the action so as to deny their superior enemy the decisive moment - this has always been the case in cavalry warfare. Hellenistic cavalry tactics were tailored so as to minimise inertia and maintain the shock of the attack for the maximum possible amount of time. Their large formations were designed to place the enemy at a substantial tactical disadvantage from the outset of the action, their small unit tactics to maintain a rolling attack. In short Hellenistic cavalry warfare was designed to keep up the all important shock effect of charging horse for the maximum period of time and to ensure that it was not wasted.

Further to enhance the effectiveness of the tactical system, Hellensitic mounted warfare placed great store in leadership. The Hellenistic organisational system was designed to break down command and to provide small units with formations easily controlled by their officers. Here the writer refers to the *ile* as a sub-unit and the wedge as a formation of attack and manoeuvre. Leadership at the lowest levels was supplemented by larger formations, the *hipparchy*, whereby one thousand horse - approximately - could be controlled on the battlefield. At the highest level the army general - often the king, for example Alexander or Antiochus III - frequently led the cavalry assault wing. This use of leadership - and more importantly the

tactical system that allowed the decisions of the leaders to become action - ensured again that cavalry attacks were as successful as possible.

The advances in the effectiveness of cavalry in the Hellenistic period would have come to nought had not the cavalry formed part of the overall scheme of the Hellenistic military system. Philip II not only introduced a new form of cavalry warfare to the western world, he also invented the Macedonian phalanx. Without the firm base of the phalanx, Hellenistic cavalry would have been useless. In the Hellenistic period cavalry and infantry complemented each other to produce a successful military system. This relationship is most starkly seen in Alexander's battles against the Persians.

The Macedonian and Persian military systems were radically different; hence it is easier to demonstrate the value of infantry to cavalry, and *vice versa*, in the Hellenistic military system. In short the phalanx acted as the 'shield', the cavalry as the 'sword'. Alexander always deployed and manoeuvred his phalanx as a slow moving, centrally placed block. Its mission was to pin the enemy and provide his cavalry with a shelter that allowed him to initiate the cavalry action upon his, rather than the enemy's, decision. Once Alexander launched his cavalry, it was devastatingly effective. This was partially because of the reasons discussed above, but it was also because the use of a firm infantry base allowed Alexander to control the battle and dictate the moment of his attack.

The role of the phalanx did not change in the later Hellenistic period,

rather the use of similar weapons and tactics made the support role of the phalanx less obvious. Nevertheless, the cavalry actions in battles such as Gaza and Raphia were still dependent on the phalanx to provide a base for action.

From the perspective of the phalanx, cavalry had a critical role to play. As has been shown, the flanks of the phalanx were extremely vulnerable in Hellenistic warfare. It has been shown that various semi-heavy and light infantry types could be deployed so as to protect the flanks of the phalanx. In the final analysis, however, only cavalry could provide the phalanx with the security it needed to complete its mission in the centre of the battlefield. In some battles cavalry wings simply cancelled each other out, and victors rode from the field in pursuit of vanquished. In others, however, a cavalry success and the subsequent threat this posed to the wing of a phalanx would decide the battle. It is noteworthy that this was even the case in Hellenistic Greece where the numbers of cavalry deployed were relatively small.

The support role of cavalry and their integration into the Hellenistic system as a whole was not limited to the shock lancers who provided the bulk of the mounted forces of the period. Hellenistic generals used many types of light horse to support their armies on the battlefield and - more importantly - on the operational and strategic levels. The Hellenistic period saw the introduction of a radically new type of mounted shock warfare. This innovation was facilitated by Macedon's cavalry traditions and the creation of the phalanx by Philip II. Once introduced, these Macedonian tactics

became an essential part of Hellenistic warfare. Cavalry provided Hellenistic armies with a shock force of great effectiveness, and the combination of such a force with a solid infantry base like the *sarisa* phalanx, produced a military system that dominated Greece and the Near East until the arrival of the Roman manipular legion.

## Chapter V - Conclusion

This work has sought to show how the Hellenistic military system combined a series of combat-arms, and how they linked to form a complex and effective military machine. The system was the product of the social and political organisation of, initially, fourth century Macedon and, later, of the successor states to Alexander's empire. An emphasis was placed on balancing the brute force of large numbers of *sarisa*-armed infantry with the tactical finesse of *élite* mounted and specialist arms. In this chapter we will discuss how the various combat-arms of a Hellenistic army interacted, how their advantages were enhanced and their disadvantages reduced to produce a coherent and effective fighting force. In particular, the strategic and tactical strengths this system gave Hellenistic armies will be demonstrated. Finally, we will discuss how the Roman manipular legion exposed the weaknesses of this system and brought about its decline and eventual downfall.

Central to Hellenistic warfare was the concept of combined- arms. Put simply, without the mutual support of the various parts of the army the weaknesses of the Hellenistic tactical system would become apparent and an army cease to be an effective fighting force. The need for close co-operation between arms began with the *sarisa*-armed phalanx, the base upon which a Hellenistic army rested.

The *sarisa* phalanx was a formation extremely resistant to frontal attack. Many examples have been quoted above that demonstrate this to be fact. This

great strength, however, produced the phalanx's basic tactical shortcoming - a need for maintenance of order in its ranks - which made the phalanx relatively immobile on the battlefield. The *sarisa* phalanx could fatally disrupt and disorder its serried array even by the simple action of advancing upon the enemy. This was the case, despite a complex system of organisation and, in many cases, a high level of drill; as witnessed, for example, on Philip V's right at Cynoscephalae. Added to this was the vulnerability of the phalanx's flanks and the difficulty of realigning a basically unwieldy infantry force to counter attacks from unforeseen directions. *Sarisa* tactics were, as a result, static. The phalanx was not a very efficient assault force and it was most effective as a solid base from which the assault-arms of the army could operate.

The defensive role of the phalanx should not, however, be decried. As the phalanx was part of a more complex whole there was no need for an aggressive infantry force, such as the Classical hoplite phalanx, in Hellenistic tactics. As long as the *sarisaphoroi* could hold their ground, then a battleline would remain intact and a 'springboard' would exist for the assault-arms of the army. In most of the actions discussed above, two bodies of *sarisa*-armed phalanx faced one another off across the centre of the battlefield, one or another only advancing - with the inevitable disorder - when events elsewhere had forced the decision to attack. It is important to note, however, that it would not have been possible for the other elements of the victorious army to achieve the localised successes that led to overall victory, without

the presence of a solid block of infantry in the centre of the army. This contribution to victory is best illustrated by comparing the role of the *sarisa*-armed phalanx in the Hellenistic system with that of the hoplite phalanx in Classical times.

In Classical warfare the charge of the hoplite was the battle winner. In the earlier part of the Classical period this is obvious; little tactical finesse was added to the charge of the hoplites and the battle would be decided by weight of numbers, the individual prowess of the hoplites, and not a little luck (1). Later advances in organisation and tactics led to the charge becoming more sophisticated; for example parts of the phalanx could be refused, as at Epaminondas' battles, or the phalanx as a whole could break up to take advantage of inner flanks created by enemy break throughs - for example as at the Nemea (2). These advances, however, simply enhanced and reinforced the basic doctrine of hoplite warfare, i.e. that a massed charge of heavily armed infantry carried the day.

In Hellenistic warfare, the battle winner was the cavalry - acting in concert with the other parts of the army. The role of the *sarisa*-armed centre was to bar the advance of enemy forces for long enough to allow the cavalry to do its job and outflank the enemy position. The only offensive role envisaged for the *sarisa* phalanx was to deliver a *coup de grace* on an already defeated enemy army.

The role of the Hellenistic phalanx was, therefore, fundamentally different from that of the Classical phalanx. The Hellenistic phalanx was part

of a larger system rather than a means to victory in itself. The importance of the *sarisa* phalanx is best illustrated by the example of the battle of Cunaxa (3). In this battle the forces of Artaxerxes were victorious as the result of the success of their cavalry arm. They were unable, however, to overthrow the 10,000 mercenary hoplites of Cyrus' defeated army because they did not have an effective close-order infantry force. The only method the 10,000 could have been defeated would have been to pin them frontally with close-order infantry and then envelop them with a superior cavalry force. This would have disrupted the integrity of the Greek phalanx and exposed them to defeat in detail. The Cunaxa example, when transposed to a Hellenistic tactical situation, demonstrates the key role of the *sarisa* phalanx. Without a solid infantry centre, any quality infantry possessed by an enemy could have simply walked through the centre of a Hellenistic army, before any cavalry could meaningfully contribute to the overall outcome of the action. Indeed one might speculate as to the outcome of battle of the Granicus had the Persians decided to fight a set-piece on the plain to the east of the river - using their mercenary Greek hoplites as the centre of their army - rather than contesting the Macedonian crossing with cavalry alone. Therefore the existence of a solid infantry centre was critical to the overall success of the Hellenistic tactical system.

Finally, the *sarisa* phalanx was relatively inexpensive and could be deployed in very large numbers. The arming of large numbers of men by the state created a solid base for Macedon, a country that had always had good

cavalry, but had been unable to use them with effect in set-piece battles. This trend continued, and Hellenistic battles were characterised by the appearance of large bodies of phalangites in the centre of the line. Often these forces were hastily raised from the lower stratum of society. This was very different from Classical warfare, where the hoplite infantry base of the army was, for the most part, provided by the middle class of Greek society. This more efficient use of manpower in the Hellenistic system was, therefore, a major reason for the overall success of the *sarisa*-armed phalanx.

The assault-force of a Hellenistic army was its cavalry. The aggressive role of this force is made obvious by the reliance on hand-to-hand weaponry - for the most part Hellenistic cavalry were equipped with lance and were armoured - and the use of grand- tactical and tactical formations specifically designed to break through an enemy line. Once again this was a phenomenon not seen in Greek warfare until the time of Philip II, Alexander and the Successors.

It is important to note, however, that the creation of the Hellenistic cavalry arm was only partially due to the adoption of the cavalry lance. The cavalry force that provided the shock force of the period was also reliant on the provision of a solid infantry base, the *sarisa* phalanx. Macedon had always had, by Greek standards, an outstanding cavalry force in its horse-owning aristocracy. What was missing from their tactical system was an infantry force that would allow the quality of the Macedonian horse to tell in a set-piece battle. The creation of such an infantry force by Philip II

transformed the role of cavalry and changed the face of war entirely.

The relationship between phalanx and cavalry on the battlefield was a critical part of Hellenistic tactics. The close order, *sarisa*-armed infantry of the period were the perfect anti- cavalry weapon. It is no surprise that the sources make no reference to cavalry breaking *sarisa*-armed infantry frontally. On the other hand Hellenistic cavalry were a fast, hard hitting instrument of exploitation. Given the right opportunity the horse of the period could outflank and envelop a phalanx in an instant, an event that had a decisive effect on the outcome of the battle. It was this enveloping manoeuvre that dominated the offensive tactics of the period.

As was demonstrated above, a number of cavalry formations were developed by which entire wings of horse could be deployed to gain tactical advantage on the battlefield. Basic decisions such as to advance, or refuse, this or that wing dominated the deployment of the armies of the period. The importance of cavalry can even be seen in the battles in Greece, where relatively small numbers of horse could influence the tide of battle decisively. On all the occasions where one side gained cavalry dominance the other was forced to capitulate or launch a cumbersome attack with the *sarisa*-armed phalanx, risking disorder and defeat. It is rare indeed that we find armies prevailing after they have lost cavalry dominance of the battlefield.

Cavalry have always been a difficult arm to control. Like all regular troops Hellenistic cavalry had to be properly formed to have maximum effect

on the enemy; hence the elaborate small unit tactics used in the period. The basic problem of cavalry warfare throughout military history has been the maintainance of the formations and tactical integrity of even a victorious mounted force. Cavalry is an active arm: it advances upon the enemy to gain local advantage, and in the Hellenistic period - given the formations and weaponry of the troops - this advance must have been at the gallop for at least the final part of the charge. Such rapid movement inevitably leads to disorder; hence so many of the sources refer to the need to drill and train to maintain formation. Hellenistic cavalry was highly organised and, we can suppose, very well trained; yet time and again the sources refer to a victorious wing leaving the field in hot pursuit, in effect cancelling out the immense tactical advantage gained by its victory. In some cases, one may assume this pursuit was necessary - to prevent a defeated enemy rallying - in others it must have been due to a loss of control by officers and a disintegration of discipline. Hence at battles such as Gaza and Raphia initial tactical advantage was lost and the two phalanxes had to cross *sarisai*, with all the attendant dangers such action entailed.

It must also be noted that generally the commanders of the period stood with their offensive cavalry wing to ensure close control of the initial charge, perhaps the critical part of the battle. Alexander at Gaugamela and Antiochus III at Raphia had close control over the movement of the assault wing and went to extreme lengths to manoeuvre for maximum tactical advantage before the attack proper took place. It is noteworthy that in most encounters

of the period only one charge was delivered; clearly command and control was too primitive to give commanders any chance of redirecting an attack once it had been set in motion. It is also noteworthy that most armies of the period maintained quite substantial bodies of *élite* horse as part of their establishment, and that these troops were at the thick of the fighting, often under the personal leadership of the commander-in-chief. Once again a method by which the generals of the period hoped to maintain a hold on events once the action began.

Cavalry was usually deployed on the wings of the phalanx, in a position whereby they could outflank the enemy army, but also because the tight formations of the phalanx precluded any supporting role for horse directly behind the centre of the army. The only time such troops might have had a chance to come to blows with the enemy would have been when their own phalanx had broken in flight, and hence the battle was already lost. Those occasions where cavalry were deployed as part of the centre - notably Sellasia and Magnesia - were exceptions, and the result of terrain considerations.

In addition, the Hellenistic powers built upon the cavalry traditions of Macedon, Greece and the Near East, incorporating mounted specialists into their armies on a regular basis. All Hellenistic armies used mounted skirmishers of some kind and notably the Seleucid army used a plethora of special types, notably horse-archers and cataphracts. In the latter case they took the Hellenistic concept of offensive horse to its logical conclusion.

So much for the phalanx centre and cavalry wings: what of the area space between these two arms and the role of the intermediate and *psiloi* forces in set-piece actions? The intervening space between phalanx and cavalry wing has drawn comment from scholars; it is into this area of an army's deployment that scholars place various tactical 'hinges' - notably the *hypaspists* of Alexander's army. Small bodies of *psiloi* or peltasts often held this position in the line, but, as has been demonstrated, the role of these troops is difficult to interpret.

There is very little evidence for a special role for peltasts in battle, certainly as far as a fast moving 'hinge' linking centre to wing is concerned. Indeed it has been concluded that the favoured candidate for such a role, Alexander's *hypaspists*, were very probably *élite* phalangites rather than the intermediate troop-type. Aside from the arguments surrounding this unit the general theory of a tactical 'hinge' is flawed. Given the speed of the cavalry advance, after some tentative manoeuvring for position, it is difficult to see a role for any foot soldiers, be they of a light or intermediate type. It is clear, therefore, that the immediate wings of the phalanx were occasionally covered by troops other than close-order infantry, but that these troops stayed in close proximity to the main infantry centre, rather than making any attempt to link dismounted centre to mounted flank.

Such a tactical doctrine is entirely logical. The flanks of the phalanx were obviously vulnerable and any move to outflank the infantry centre, or indeed 'lap round' if one side had an advantage in numbers and hence

frontage of phalangites in a face- to-face combat, would have had disastrous effects. The Achaeans demostrated that they could detach sub-units of phalanx at Mantinea to face to the flank, but they were an extraordinarily well drilled formation, fighting in a relatively small action, in an enclosed space. In most of the battles of the period it would be more effective to deploy troops such as the Hellenistic peltast - with their high training and intermediate tactics - to hold the immediate flank of the centre and logical that such a closing force was unable to support a cavalry wing in any useful way.

Furthermore the phalanx of the centre was there to provide a lasting resistance to their opposite numbers, until an enveloping manouevre could be completed. If one assumes that the immediate flanking supports to the centre, peltasts for the most part, were to link foot to horse, then this implies that the phalanx was intended in some way to manoeuvre to aid the cavalry in their attack: how else could the rapidly expanding gap between horse and foot be linked by a small unit of peltasts if the mass of the phalanx did not move forward? This is patently not supported by either the sources or this thesis' reconstruction of the role of the phalanx in Hellenistic warfare.

Further, what possible good could a small unit of peltasts expect to do if the phalanx remained stationary? The 'hinge' theory presumes they would advance into the gap - already noted as 'rapidly expanding' - in an effort to support both horse and foot. Such a manoeuvre would accomplish neither task. In the former it would place the peltasts too far from the flank of the

phalanx creating what is called an 'inner flank' (4). This invited a localised outflanking manoeuvre with potentially disastrous consequences. In the latter case the relative speed of the cavalry and the 'hinge' would have led to the peltasts becoming dangerously isolated, in an area where normally large numbers of hostile cavalry were operating. Such a small force, which peltasts inevitably were, would have fallen easy prey to enemy horse, despite any anti-cavalry equipment they might be carrying - for example long spears. Therefore peltasts could be used to seal the flanks of the phalanx, but would not have been expected to link infantry centre to cavalry wing.

The role of *psiloi* in the main battle-line is easier to chart. It is clear from battle accounts that Hellenistic armies routinely used *psiloi* in set-piece actions. *Psiloi* were used in conjunction with other troop types, for example elephants, to enhance their capabilities. *Psiloi* could be placed behind the main line, or even - according to the tacticians - incorporated into the ranks of the phalanx, to provide missile support. This writer has emphasised the relative ineffectiveness of missile weapons in ancient warfare, but we must not underestimate the value of these soldiers. Hellenistic generals developed many complex and varied techniques to enhance the effectiveness of their own *psiloi* at the expense of that of the enemy. In particular *psiloi*-missiles would have contributed to the cavalry actions on the flanks of the armies.

Where peltasts and *psiloi* really came ito their own in this period is in extra-battlefield situations. The most spectacular feats of arms performed by these troops comes from this area of military activity. In many ways parallels

for developments in this sphere abound in the Classical period; indeed light troops were specifically introduced into Greek warfare as fighting spread from the 'hoplite friendly' plains to the rough, woody highlands of Greece during the Peloponnesian War. What is outstanding in the Hellenistic period is how armies built on this tradition and added the military skills of the peoples of Alexander's empire to produce highly skilled and specialised formations of rough terrain troops. The military mission of both the eastern monarchies, with their vast area of operations, and the new powers of Hellenistic Greece, centered as they were in the more broken areas of Greece, made the activities of *psiloi* and peltasts vital to the overall success of operations in this period. Indeed some campaigns were entirely composed of skirmish actions and the like - take for example many of Philip V's campaigns in Greece. These two 'irregular' arms therefore contributed much to the Hellenistic all-arms concept; a general of the period could not expect to successfully bring his cavalry and phalanx to battle without the aid of his light and intermediate forces. Furthermore the comprehensive Hellenistic attitude to war, whereby the objective was destruction of the enemy state, was greatly aided by the light infantry components of the army, who were ideally suited for raiding and *coup de main*.

The great innovation of the Hellenistic period was to create a balanced all-arms force in which each component of the army supported and supplemented each other. The main assault force of the period was massed cavalry, equipped, organised and trained as a shock force. This mounted

force was numerically strong by the standards of the Classical world. The *sarisa*-armed phalanx complemented the cavalry by holding the main line of battle. This produced a 'swinging door' effect in most Hellenistic battles as each side raced to break through with their respective assault- wing and take the enemy's infantry in flank and rear. To ensure that the enemy could not penetrate the centre, the *sarisa* phalanx was envisaged as a solid, closely packed defensive formation. It was so successful in this that many ancient writers refer to it as a city wall and most of the battles of the period testify to its resilient, stolid resistance in action. The phalanx, however, paid for its defensive strength by being cumbersome in attack; hence its reliance on the cavalry for support and aid in any confrontation with equivalent enemy infantry. Therefore, once again, mutual support was the order of the day in the military system of the period.

Rounding off the army were specialist forces of intermediate infantry, called peltasts in the Hellenistic period, and *psiloi*. The former were a Hellenistic innovation, producing a highly effective, specially trained all round soldier, both for the battlefield and, more importantly, for the *petit guerre* that made up much of the fighting in the period. *Psiloi* forces were expanded and refined to produce all-terrain missile armed infantry to supplement the armies' operations again both on and off the battlefield.

What made the Hellenistic military machine so successful was the manner in which the cost of its maintenance was distributed. It deployed a mass of infantry that did not rely upon a specialist group in society for its

manpower. In effect any able bodied man could be equipped and basically trained to fight as an effective phalangite. That is not to say that *élite* bodies of phalangites did not exist. The high levels of drill and tactical finesse demonstrated in the sources by some units testify to the high levels of professionalism that could be achieved. Rather, the minimum level of equipment and military competence required was far lower than that demanded by hoplite warfare.

The expense of Hellenistic warfare lay with the cavalry, but this was not a crippling burden on the states of the period, many of which were very poor and economically underdeveloped by Classical standards. A horse owning aristocracy of great quality existed in Philip II's Macedonia and, once re-equipped with lance and trained in wedge and manoeuvre tactics, could easily overcome the mounted forces of the Classical armies of Greece. Once the Persian empire fell to Alexander and his Successors ample land existed for the maintenance of the large cavalry forces required by the tactics of the time. What was critical to the system, however, is the relative combat effectiveness of the cavalry- *sarisa* combination when compared to the hoplite phalanx. Put simply, a cavalry breakthrough could take place in an instant and its effects were devastating. What is more, a far smaller percentage of the army was needed to effect this breakthrough. For the most part, Hellenistic cavalry proportions did not rise over ten percent of the total army strength. On the other hand for hoplite attacks to be effective the vast majority of the fighting force had to be hoplites. In comparison, the

Hellenistic system, based as it initially was on a vast block of Macedonian peasants, was cheap and tapped the military manpower of the state more effectively than did the Classical system. Once Alexander had conquered the Persian Empire and passed it down to his Successors the massive resources of the Near East could be placed behind this new military system, finally making hoplite tactics obsolete after the abortive Lamian War. In Greece proper, areas that had been backwaters in the Classical period embraced the new style of warfare and raised vast armies - by Classical standards - of *sarisa*-armed infantry supplemented by small bodies of cavalry and support troops.

The Hellenistic military system created by Philip II dominated warfare in the Near East until the arrival of Rome and it is useful briefly to sum up the failings of the Hellenistic military system when compared with that of Rome. Rome's military machine was, as it emerged from the Second Punic War, superior to that of the Hellenistic world in two main respects. Firstly, the *sarisa* phalanx's weaknesses became obvious when opposed by the manipular legion. Secondly, during the war with Carthage, Rome had developed an aggressive cavalry force that was the match for the Hellenistic lancer. These two factors combined were the death knell to the Hellenistic military system.

The use of effective cavalry by the Roman army dates from the end of the war with Hannibal and this part of the Roman army performed consistently well in the wars in the Hellenistic east. Notably, Livy commented on the effectiveness of Roman cavalry weapons in the Second

Macedonian War; and at the battle of Magnesia a combination of bad deployment and inactiveness by the Seleucids and opportunism and aggressiveness by the Romans and their allies allowed the large force of cavalry - many of them *cataphracts* - deployed on the Seleucid left to be driven from the field with relative ease. The effectiveness of Rome's mounted-arm in the later third and early second centuries contrasts well with the performance of her cavalry in the wars against Pyrrhus, where clearly the Hellenistic troops had the upper hand. In the majority of the set-piece actions fought between Rome and the Hellenistic powers in the post Hannibalic War period, Rome's cavalry performed well. Why this was the case was examined above: it is sufficient to note here that the Romans emphasised aggressive attack over manoeuvre, and that overall this tactical doctrine was successful. Given this to be the case, then a major pillar of Hellenistic battle tactics - a reliance on cavalry to achieve break-through - was put in doubt.

This deficiency was made worse by the failings of the *sarisa* phalanx when faced with the manipular legion. Alexander's armies had faced the Persian army, which had an excellent mounted arm, and prevailed because an absence of an effective close-order infantry arm nullified the Persian cavalry. In the case of Rome, however, the phalanx faced veterans of the Punic War, with better equipment and fighting tactics.

It has been shown that the *pila* and sword armed legion could make little impression on a static phalanx. This was the case in the Pyrrhic wars, where - as has been demonstrated - the battlefields were constricted and the legion

had little room to manoeuvre. Faced, however, with a situation such as Cynoscephalae or Pydna, where tactical circumstance forced the phalanx to advance, the legion came into its own. The small unit organisation and leadership of the legion at this period was of exceptional quality. Furthermore, the tactics of the manipular legion, based as they were on small unit manoeuvre and individual fencing, were ideally suited to absorbing the attack of the phalanx and taking advantage of any disorder in the ranks of the *sarisaphoroi*. At both Cynoscephalae and Pydna initially powerful, solid formations of phalanx fell apart after a period of time, allowing the individual parts of the larger formation to be destroyed piecemeal by the Romans.

This is not to say the Romans did not have difficulties with Hellenistic armies; quite the contrary. Whenever legionaries made reckless attacks on formed units of phalanx they were always defeated. Also, as at Magnesia, the manipular legion showed itself markedly vulnerable to the charge of Seleucid cataphracts. Rather, the combined arms tactics of Hellenistic warfare were neutralised by Rome's army of the post-Hannibalic War period. Although individual parts of the Hellenistic system - a *sunaspides* of phalanx or charging, lance-armed *cataphracts* - might check the Roman legion, there was no overall system that could link together the entire Hellenistic military machine to bring victory. Just as the innovation of lance-armed cavalry combined with masses of *sarisa*-armed infantry brought about the eclipse of hoplite warfare, then so the manipular legion - again based on mass

conscription (5) - linked to aggressive cavalry *sarisa* warfare.

In its heyday Hellenistic warfare was the dominant tactical system of Greece and the Near East. It combined a sophisticated system of interrelated troop types that interacted on the battlefield to produce victory. This system could deal with all the aspects of warfare to be found across the vast area of the Hellenistic world. Hellenistic tactics were not only effective, but - as the majority of the army could be composed of peasant infantry equipped with the *sarisa* - relatively inexpensive. With the invention of this method of warfare by Philip II of Macedon in the mid-fourth century came the rapid military collapse of the Greek city-state and of hoplite warfare. No longer did the state rely on a hoplite class, with all the attendant political implications; the Hellenistic military system needed large centralised monarchies or city-leagues, with state arsenals and sophisticated land management systems to maintain the forces of cavalry and *sarisaphoroi*. The complexity of the system also promoted more professional attitudes to war, the creation of a winning military doctrine that could be applied to armies of tens- of-thousands of men. Perhaps this change in attitude also made war more ruthless as each Hellenistic state's goals became domination of large geographic areas and the total destruction of the enemy, rather than the limited war of Classical times.

The Hellenistic military system held centre stage in the eastern Mediterranean for some two hundred years. Like hoplite warfare, however, it had flaws, which Rome's military machine brought into stark contrast. Once

the manipular legion linked to aggressive, if unsubtle, cavalry tactics, broke the equilibrium that had been based on a balance of mutual support between combat- arms, then the days of the Hellenistic tactical system were numbered. It is notable that just after the closing date of this thesis, the battle of Pydna, the Hellenistic powers began to rearm in the Roman fashion and legion to replace phalanx in the east (6).

Notes to Chapter I

1. Despite modern convention σαρίσα is spelt with one *sigma* in ancient literature, cf. Liddel and Scott *A Greek-English Lexicon*, Oxford, 1944, p.1584, s.v. σαρίσα:

2. Liddell and Scott, *op.cit.*, p.1913, s.v. ϑΑΛΑΓΞ literally "a roller".

3. Polyb.18.29 quoting Homer *Iliad* 13.131-3. Of course, the reference is used by Polybios as a literary device, the phalanx of Homer bears only a superficial resemblance to the Hellenistic phalanx. the translation is that of I. Scott- Kilvert in Polybios, *The Rise of the Roman Empire*, Penguin, London, 1979, p.510

4. Thuc.4.96.

5. Note that the Greeks could use the word phalanx as a general term for a body of soldiers. Eg. Persian cavalry at the Granicus are called a phalanx, cf. Arr.1.14.1.

6. For hoplite warfare see the excellent V. D. Hanson, *The Western Way of War; the Infantry Battle in Classical Greece*, London, 1989; V. D. Hanson, (Ed.), *Hoplites: the Classical Greek Battle Experience*, London, 1991. For other general works on this period cf. A. Andrewes, *Greek Society*, Oxford 1967, pp.162ff.; Kromayer-Veith pp.28ff; 50ff.; H. L. Lorimer, "The Hoplite Phalanx", *BSA*, 1947, 42, p.76ff; L. H. Jeffery, *Archaic Greece*, Cambridge, 1976, p.41; 67ff; Snodgrass, *AAG*, pp48ff.; J. Salmon, *JHS*, 77, 1977, pp.85-92; for the origins of

this type of armour cf. A. M. Snodgrass, "Carian Armourers - The Growth of a Tradition", *JHS*, 84, 1964, pp.107-118; especially p.117; A. M. Snodgrass, "The Hoplite Reform and History", *JHS*, 85, 1965, p.110-122; for general tactics cf. Anderson, *MTPAX*, pp.13ff; J. Holladay "Hoplites and Heresies", *JHS*, 102, 1982, pp.94-103.

7. Anderson, *MTPAX*, pp.14-20 (p.17 for size); Liddell and Scott p.1451, sv. πόρπαξ and ἀντιλαβή Connolly, *GRA IV*, pp.51-54 (p.53 for weight of 7kg); the Spartan anecdote Archilochus fr.6; Alcaeus in Hrd. 5.95.1-2; cf. Snodgrass, *AAG*, pp.53-54; Anacreaon fr. 51 (Diehl); cf. Horace *Odes* 2.7.10; how the *aspis* was carried cf. Lorimer *BSA*, 1947, 42, p.76; Xen. *Anab.*6.5.16 for shield slung on back in retreat; taking up of shields, Xen.*Hell.*4.4.10; Dercylidas was forced to stand guard carrying his shield as a punishment, normally it would have been rested against his legs, cf. Xen.*Hell.*3.7.9.

8. Thuc.5.71.ff. (of Mantinea); used to gain tactical advantage at the Nemea, cf. Anderson, *MTPAX*, p.141 ff.; contra M. Cary, *CAH.V*, p.47, "...a typical encounter of the pre-scientific age of Greek warfare."; cf. Xen.*Hell.*4.2.9-23 for account; reconstructed by W. Kaupert in Kromayer, *AS* IV, text to Blatt V, col.29; cf. Kromayer *Schlachtfelder* Bd IV.207ff.; *Schlactenatlas Gr. Abt.* Blatt 3 Katen 8.

9. Thuc.5.69.

10. K.M.T. Chrimes, *Ancient Sparta*, Leicester, 1948, pp.359 ff. Miss Chrimes quotes Arr. *T.T.* 3.5; cf. Anderson, *MTPAX*, p.29; 41 (origin

in Peloponnesian War), cf. Droysen, *Heer*, p.28. Contra, Lazenby, *Spartan Army*, p.32 n.53, 54; Delbruck, p.152 (the younger men had heavy armour, quotes Xen.*Hell*.4.5; 4.8.37); type of armour used - cf. Anderson, *MTPAX*, pp.20-28; muscle cuirass p.20-21 cf.n.36; *linothorax* p.22.n.37, Persian War origin, cf. Liddell and Scott, p.1051 s.v. λινοθώραξ. Pausanias 1.21.7 describes linen armour. Alexander wore linen armour at Gaugamela Plut.*Alex*.32.8. Anderson, *MTPAX*, p.23 small plates could be added to the *linothorax*, cf. Snodgrass, *EGA*, pp.84-86. Arm-guards Anderson, *MTPAX*, p.24, cf. Lorimer, *BSA*, 42, 1947, p.132. For the *spolas* cf. Xen.*Anab*..3.3.20, a leather item Pollux *Onomasticon* 7.70, Liddel & Scott 1629 s.v. σπολάς, in Arist. *Birds* 933ff. It is a waterproof leather jerkin. Archaic Greek armour covered much more of the body, cf. Hagemann, *Panzerung*, 1 pp.127-132; H.L. Lorimer, *BSA* 42 1941, pp.88- 89; 132-133; *Homer and the Monuments*, London, 1950, p.247, 252. For leg defenders cf. Furtwaengler *Olympia IV*, p.160 pl.LX no. 990.

11. Heavy Archaic hoplite cf. Connolly, *GRAW*, p.59. For equipment weight cf. Droysen, *Heer*, p.24; Chrimes, *op.cit.*, p.359ff; of Prussian infantry in the Seven Years War, C. Duffy, *The Army of Frederick the Great*, London, 1974, p.82. Lightening of armour, cf. Anderson, *MTPAX*, p.28 n.81; p.29; Droysen, *Heer*, p.28; K. M. T. Chrimes *op.cit.*, p.359ff, esp. p.366-8 - dated post-Peloponnesian War. There is a common misconception that weight of equipment directly effects

tactical employment, see Polyb.2.29ff. For Spartan equipment cf. Kromayer-Veith p.38; Athenian equipment, pp.50-51; Sicilian equipment, p.67ff. Lack of Pursuit cf. Plut.*Mor.*228F; Polyaenus 1.16.3; cf. Anderson, *MTPAX*, p.149. For helmets cf. Anderson, *MTPAX*, pp.28ff; Kromayer-Veith p.51. For linen armour, Anderson, *AGH*, p.141-2. J. Keegan, *The Face of Battle*, New York, 1976, examines the role of fatigue in combat, pp.70ff; the 'will to combat' for a Medieval army, pp.114ff; V. D. Hanson, *The Western Way of War*, pp.117ff examines motives for fighting in a Classical context.

12. Contra, Lazenby, *Spartan Army*, p.32. Xen.*Hell.* 4.4.10 implies the use of the *lambda* on Spartan shields, pehaps indicating some central equipment pool, note also the Spartans equipped large numbers of *helots* at state expense from the period of the Peloponnesian War, cf. Thuc.4.80; 5.34, 64, 67; 7.19.

13. Chrimes p.362ff; Anderson, *MTPAX*, pp.20-8. Chrimes makes much of Xen.*Ages.*2.7, contra, Lazenby, *Spartan Army*, p.32. Xen.*Anab.* 1.2.15-6 has hoplites with no body armour. No other sources from the later Classical period support unarmoured hoplites.

14. *Helot* hoplites being the most obvious group, cf. Thuc.4.80; 5.34, 64, 67; 7.19.

15. Chrimes, *op.cit.*, p.262; quoting, Arr.*T.T.*3.5. Chrimes believes the *pilos* to be made of felt. Anderson, however, discusses the *pilos*, making the point that several bronze examples exist, *MTPAX*, pp.29ff.

16. Connolly, *GRA W*, pp.59-60; Hageman, *Panzerung*, pp.134ff.

17. Connolly's reconstruction of Second Coronea on pages 66 and 67 of J. Hackett, (ed.), *Warfare in the Ancient World*. London, 1989, gives an excellent impression of the closely packed ranks of the phalanx and the difficulty of fencing with a nine foot spear. For sources cf. Plato *Laches*, 182a; *Mem*.3.12.5. For the overarm and underarm thrust cf. Connolly, *GRA W*, pp.41-2. There is a problem with the hoplite spear: if hoplites lowered spears to the underarm position as they began to advance, how did they change to the overarm position before engaging, as habitually shown on sculpture? See V. D. Hanson, *Hoplites: the Greek Battle Experience*, pp.31-2; 92-3.

18. Connolly, *GRA W*, p.63ff; J.K. Anderson, "Sickle and *xyele*", *JHS*, 94, 1964, pp.166ff; D.M. Robinson, *Excavations at Olynthus*, Vol.X, pl. cl. 1598 is a typical example of a sword of the Classical period, pl.ciii. may be a *xyele*.

19. Hanson, *Western Way of War*, pp.177ff; Lazenby in Hanson (Ed.), *Hoplites: the Greek Battle Experience*, 1991, pp.91ff.

20. G. Cawkwell, *Philip of Macedon*, London, 1968, pp.151-3. For a discussion of this phase of the battle, cf. Hanson, *Western Way of War*, pp. 28-9; 169-70; 172-7; Lazenby in Hanson (Ed.), *Hoplites: the Greek Battle Experience*, 1991, pp.93ff.

21. Plato *Laches* 182a; cf. *Men.* 3.12.5.

22. Thuc.5.68; *Resp.Lac.*11.4; Anderson, *MTPAX*, pp.225-51; Chrimes, *Ancient Sparta*, pp.359ff; Lazenby, *Spartan Army*, pp.3-40; Chrimes, p.371, quotes Vegetius *RM.*III, that the Spartans wrote military manuals.

23. In the Hellenistic period the file was called the *lochos*; in the Classical period, however, this word referred to a unit of several hundred men. It is difficult to determine what word might have been used for the Classical file, although *stichos* is a candidate. Countermarching is laid out in the tacticians, Ascl.10.13-16; Ael.21.1-5; 28.1-4; Arr.*T.T.*23.1-6; 24.1-4. The role of the *lochagos* is firmly laid out at Ascl.2.2; Arr.*T.T.*22.1; Ael.5.1-2. Drills for sub-unit wheels are laid out at, Ascl.10.2ff; Ael.25.1ff; Arr.*T.T.*21.1ff. For Spartan tactical drill cf. Connolly, *GRAW*, pp.42ff; Lazenby in *Warfare in the Classical World*, London, 1989, pp.64ff; *Spartan Army*, pp.26-9; *Lac.Pol.*11.4, 8; Xen.*Hell.*6.2.21

24. Kromayer-Veith pp.93ff; Hanson, *Western Way of War*, p.146; Mantinea, Thuc.5.71.1ff. is often cited as the classic example of the 'shield drift'; at the Nemea the Spartans exploited the 'shield drift' to gain tactical advantage, Xen.*Hell.*4.2.19; cf. Lazenby, *Spartan Army*, pp.139ff.

25. Xen.*Hell.*6.4.3ff; Diod.15.52ff; Plut.*Pelop.*20ff. For Philip II acquiring this tactic whilst a hostage in Thebes cf. Wilcken, *Alex.* p.30; Burn, *G&R*, 12, 1965, pp.140ff; J.M. Connie, *Epaminondas and Philip II: A*

*Comparative Study in Military Reorganisation*, PhD thesis, University of Kentucky, 1980, pp.4 and 67; A. Aymard, "Philippe de Macedon otage a Thebes", *REA*, 56, 1954, pp.15-36; Kromayer-Veith pp.97, 116. For evidence of his imprisonment, cf. Diod.15.67.4; 16.2.2; Just.7.5.1; Plut.*Pelop*.26.4.

26. Xen.*Hell*.6.4.3ff.

27. R. Sealey, *A History of the Greek City States*, Berkeley, 1976, pp.38-40; A. Andrewes, *The Greek Tyrants*, London, 1956; W.G. Forrest, *The Emergence of Greek Democracy*, London, 1966, pp.88-122.

28. Thuc.2.13; for Sparta's problems cf. Chrimes, *op.cit*, pp.348ff; Cavaignac, *Klio*, 12, p.271; W.G. Forrest, *A History of Sparta*, London, 1968, pp.131ff.

29. For military settlers cf. A. Bouche-Leclerq, *Histoire des Seleucides*, Paris, 1913, pp.476ff; K. Kressig, *Wirtschaft und Gesellschaft im Seleucidenreich*, Berlin, 1978, pp.32ff, 46ff; a slave phalanx was used at the battle of Corinth, Paus.1.15- 16. For Egyptian *machimoi*, cf. Polyb.5.65; cf. A. Serge, *Bul. Soc. Arch. Alex.*, 1934, pp.265ff; Tarn in *CAH*, VII, pp.730-1.Macedon, Griffith, *PCPS*, 4, 1956, p.8; Macedon was not a rich country, cf. Arist.*Econ*.II.1350a22; Front.*Strat*.4.7.6; Arr.7.9.

30. Polyb.2.38.1; 11.9.5.

31. Polyb.18.29; Theoph:*H.P.*3.12.2; Ascl.5.1; Arr. *T.T.*16.1; Polyaen.2.29.2; Ael.14. Different lengths for each rank, cf. Kromayer-Veith p.134; Th. Steinwender, *Hermes*, 1909, pp.179-97; Delbruck p.138 n.3 the front rank had hoplite spears which were used one-handed. Could date from Alexanders time, Ad. Bauer *Griech. Kriegsalter.* 2nd Ed., 1893, p.447; Kromayer-Veith p.134; Parke *Mercs.* p.156 has the longer spear dating from Iphicrates reform of the peltast; cf. *Scol.Il.* 13, 130; A. Dain, *Elien le Tact*, Paris, 1946, p.80 argues that the length of the sarisa had reduced by the time of the Roman wars; Tarn, *HMND*, p.14 argues quite the opposite, cf. Tarn *op.cit.* for the Beamatists Cubit, cf. Kromayer-Veith, p.235-7. Walbank, *Philip*, p.289 believed 21 feet in Philip V's time.

32. Lammert, *RE*, s.v. '*Sarissa*', col.2517-9; Markle, *AJA*, 82, 1978, pp.483ff; *AJA*, 81, 1977, pp323ff; cf. M. Andronicus, "Sarise", *BCH*, 94, 1970, pp.1ff. Note Tarn, *HMND*, p.12 who believed the *sarisa* to be longer, but lighter than the *doru*, Markle's reconstruction demolishes this belief.

33. M. Feyel, "Une nouveau fragment de reglement militaire trouve a Amphipolis", *RA*, 1935, pp.29-54, cf. col. I, ll.3.

34. Different lengths for each rank, cf. Kromayer-Veith p.134; Steinwender, *Hermes*, 1909, pp.179-97; Delbruck, p.138 n.3 the front rank had hoplite spears which were used one-handed; Markle, *AJA*, 1978, pp.492ff and Hammond in Hatzopoulos and Loukopoulos (Eds.), *Philip*

*of Macedon*, p.59, argue that the phalanx was occasionally re-equipped with one-handed hoplite spears. Polyb.18.29.2; 30.1-4; cf. Arr *T.T.*12.10; Ael.14; Ascl.5; Bosworth, *HSCP*, 81, p.240; Walbank, *Philip*, p.289; Tarn, *HMND*, pp.27-8. General unwieldiness, cf. Livy 38.42.4; Arr.1.4.1 where it was used in a sweeping motion from side to side, a feat difficult to conceive accomplished with one hand! Five *sarisai* points projected from each file in the phalanx, cf. N.G.L. Hammond, "Training in the use of the sarisa and its effect in battle", *Antichthon*, 14, 1990, p.53; see the diagram in Hammond, *AG:KCS*, p.55, 164ff; cf. Markle, *AJA*, 81, pp.329ff.

35. Ascl.5.1; cf.; Ael.12 Arr.*T.T.*12, 19.1; Plut.*Aem.Paul.*19.1; *Cleom.*11.2; Diod.20.100.6; eight palms equalled twenty-four inches, cf. Becher, *RE*, s.v. "Palaiste", XVIII, 2.2471. Droysen, *Heer*, p.13, 60cm in diameter; cf. Launey, 1, p.340ff; Coussin, *Instits.*, p.76, pl.XL.2; Kromayer, *Heer*, pp.108, 133, 50cm diameter; Anderson, *MTPAX*, p.131, cf. n.63; Head, *BMCC:Mace.*, pp.7ff for shields on coins; Walbank, *Philip*, p.289, 18" dia.; Reinach, *BCH*, 1910, pp.444ff; G. Lippold, *Zu den Shildformen der Alten*, Jena, 1910, pp.501ff, cf. notes 13-15; D. Burr, *Terracottas from Myrine*, Vienna, 1934, p.16, n. 112, pl.41; Menas stele, cf. Rostovtzeff, *SEHHW*, p.128.

36. Polyaen.4.9.3; Plut.*Dem.*49 are two examples of the confusion the sources can cause. For *pelte*, cf. Liddell and Scott, p.358, a small, rimless leather shield; cf. Hrd.7.75.

37. Bowl shields, H. Droysen in *A VP*, II, pl.2 (perhaps), pl.46, no.2; pl.48, no.1; A.J. Reinach, *BCH*, 34, 1910, p.437, fig. 2; p.439, fig 3, A; p.444, fig. 7; P. Callaghan, *AAA*, 11, 1979, pp.53-60; *BICS*, 28, 1981, pp.115-21; *A VP*, I, p.251, no number, for belt buckle. Lyson and Callicrates, Callaghan, *AAA*, 11, 1978, p.56. Boscoreale: M. Robertson, *JRS*, 45, 1955, p.64, pl.12 (may be an *argyraspid* shield); Heuzey, *BCH*, 8, 1884, p.349; R. Zahn, "Makedonischer schild, Makedonischer becher schuchthand", *Studien Zarvor-und Fruch Geschichte Batae*, 1940, pp.48-72. The relief work on the faces of these shields is often seen as typically Macedonian, cf. G. Waurick in *A VP*, II, Taf.45, pl. 5 and 6.

38. Plut.*Aem.Paul.*19, note Plutarch refers to a *pelte*.

39. Reinarch, *op.cit.*, p.437, fig 2, again the shield is depicted frontally, note it may be a bowl shield. For the shield-cover cf. *A VP*, X, Taf.27, f, g; cf. p.33 for text.

40. Connolly, *GRA W*, p.79; the shield is very similar to the Persian *gerrha*, cf. Snodgrass, *AAG*, p.78.

41. Livy 32.17.13; cf. Caes.*B.G.*1.25 for *pila* pinning shields together.

42. For: Fuller, *Generalship*, p.51; Tarn, *HMND*, p.11; Walbank, *Philip*, p.289; Kromayer-Veith p.134, nb. contradicts at p.108. Against: Hammond, *AG:KSG*, p.32, only officers wore the demi-cuirass; Griffith, *PCPS*, 4, 1956, p.8 due to socio- economic factors, p.9 larger spears compensated; Droysen, *Heer*, p.110; Delbruck, p.182 using the

Paeonian coin; Rustow-Kochley p.240 in effect an Iphicratean peltast. Undecided: Droysen, *Heer.*, pp.40-1 cf. n.27 refering to Dio 77.7 (contradicts p.110); Hammond in Hatzopoulos and Loukopoulos (Eds.), *Philip of Macedon,* p.59 simply notes how heavy the armour depicted in the Lyson and Callicrates tomb appears to be.

43. M. Andronicus, *Vergina: the Royal Tomb*, Athens, 1984, p.37, fig.16; M.V. Charbonneux, *Hellenistic Art*, London, 1973, p.56, 285, pl.53; Hammond in Hatzopoulos and Loukopoulos (Eds.), *Philip of Macedon,* p.63, notes the spear could be a *sarisa*; *A VP*, II, p.285; Reinach, *RA*, 1, 1889, p.319; A. Davesne, *Frise du Temple d'Artemis,* Paris, 1982.

44. *A VP*, II, pl.1, 2; Coussin, p.76, pl.1.23.2; G. Waurick, *A VP*, Taf.61, p.3; Andronicus, *op.cit.*; Hammond, *op.cit.*

45. A.H. Smith, "Some recently acquired reliefs in the British Museum", *JHS*, 36, 1916, pp.81-2, figs. 12-13; P. Connolly, *CAH*, vol.VII, plates, part 1, Cambridge, 1984, p.84, fig.103; *A VP*, II, pp.141ff, pl.1, 2 (also shows mail cuirass), 9, 26; A. Davesne, *La Frise du temple d'Artemis a Magnesie du Meandre, catalogue des fragments du musee du Louvre*, Paris, 1982, fig.6, nos.2, 4; fig.18, no.1; fig.62, no.2; fig.79, no.1; fig.80, nos. 2, 4; fig.85, no.2; fig. 94, no.3; fig.101, no.2; fig. 103, no. 1; fig. 108, no.6; fig 115, no.3; fig. 119, no.2; Coussin, *Instits.*, p.76, pl.23, no.2 for an 'iron bound' cuirass.

46. Hatzoupoulos and Loukopoulos (eds.), *Philip of Macedon*, Athens, 1980, p.225, pl.127. For a discussion of the *linothorax* cf. *A VP*, II,

p.279.

47. Polyaen.4.2.10.

48. Polyaen.4.3.12; cf. Feyel, *op.cit.* p.38 for a similar piece of equipment from the later Antigonid period.

49. Curt.9.3.21-3; cf. 8.5.4; 9.3.21 for re-equipping as Silver Shields.

50. Arr.1.27.8; 2.4.3; 3.23.3; 4.6.3, 28.8.

51. Plut.*Phil.*9; Paus.8.50.1; cf. Polyb.11.9.5, 10.11. Note the Achaean league had a force of hoplites in the time of Aratus, cf. Polyb.4.14.

52. Polyb.2.68.

53. Livy 32.10.11.

54. Feyel, *op.cit.*, col.I, ll.2 for *kothubus* (two *obols*), ll.6 *thorakes,* (6 *obols*) and *hemithorax* (1 dr.). Cf. Liddell and Scott, *Suppl.*, p.87 for a definition of *kothubus.* Feyel, p.31 argues they might be a *perizoma* which was a girdle or loincloth, cf. Liddell and Scott, p.1314.

55. Connolly, *GRAW,* pp.79-80; Delbruck p.179; Walbank, *Philip.* p.290; for *hegemon* cf., Feyel, *op.cit.*, p.31, a front ranker; contra Lesquier, pp.83ff; *Rev.Phil.*, 1908, p.222 argued a *hegemon* was a commander of a *syntagma.* For Macedonian officers in general cf. N.G.L. Hammond, "Some Macedonian offices c.336-309 B.C.", *JHS,* 105, 1985, pp.156-160.

56. App.*Syr.*35.

57. Ascl.1.2; Ael.2.7-9; Arr.*T.T.*2, note Arrian refers to hoplites with coats of mail, a reference to Roman legionaries of the second century A.D.?

58. Thuc.2.100; cf. Geyer, *Maked.b.z.Phil.* p.88; R. Lock, *Army* p.8; Best pp.142ff. That Macedon was weak in infantry before the reign of Philip II cf. Thuc.4.124; Polyaen.2.1.17; 4.1.1; Xen.*Hell.*5.2.37.

59. Lock, *op.cit.*, pp.9ff, 21, 22, 24, n.57; cf., Theopompus, Fr.348 (*FrGrH.*p.115); Anaximenes, *Fr.Gr.H.*II, A, no.72, F4, pp.116-7; Harpocreon, Demothenes *Olynthiacs* 2.17, Jacoby, FrGrH., II, A, no.72, F4, pp.116-7; R.D. Milns, "The Army of Alexander the Great", *Foundation Hardt Pour L'Etude De L'Antiquite Classique,* 22, 1967, pp.87ff; *Alexander the Great,* London, 1968, pp.46ff; *Hist.*, 16, 1967, pp.509; Berve 1, p.113; Kromayer-Veith p.99; Tarn, *Alex.*, 2, p.144. For later references to *petzhetairoi;* cf. Phot.*Lex.*s.v. πεζέταιροι, Arr.4.23.1: Plut.*Flam.*17.8; cf. Bosworth, *CQ,* 23, 1973, pp.245ff; Hammond & Griffith, *Mace.*, II, pp.405ff; N.G.L. Hammond, *CQ,* 28, 1978, 128ff; *AG:KGS,* p.27.

60. The debate is based on the evidence of Diodorus, 16.3.1; cf. Wilcken, *Alex.*, pp.31-2; *CAH.VI,* p.205; Parke, *Mercs.*, p.155; Hogarth, *Philip and Alexander of Macedon,* pp.60ff; Hammond in Hartzopoulos & Loukopoulos, *Philip of Macedon,* p.59; Andronicus, *BCH,* 94, 1970, pp.96-110; Lammert, RE, 2513ff; J. R. Ellis, *Philip II and Macedonian Imperialism,* 1976, p.53.

61. Markle, *AJA,* 82, 1978, pp.484-9; nb. Hammond, *AG:KSG,* p.26,

appears to support the introduction of hoplites. The area probably did not have the *polis* base to support hoplites in any number, cf. Arr.7.9; Lucan 10.47-8.

62. Diod.16.3.1; cf. Front.*Strat*2.3.2; Hammond, *History of Greece*, p.538; Kromayer, *AS*, II, p.165.

63. Diod.16.3.1., Loeb translation.

64. Diod.13.44.3; cf. Parke, *Mercs*, pp.155-6; Anderson, *MTPAX*, pp.129ff; Best pp.3-11, 102ff; Lock, *op.cit.*, pp.23, 24, n.57; Coussin, *Instits*, pp.65, 68; Best pp.3-11; cf. Lucan *Dial.Mort*.439.

65. Lock, *op.cit.*, p.23 on Euripedes *Rhesus* 305; cf. Karstedt, *Hermes*, 81, 1957, p.104.

66. Missile armed with addition of long spear cf. Delbruck p.182; Rustow-Kochly p.240. Converted to hoplites cf. Anderson, *MTPAX*, pp.129ff. Nothing revolutionary in Iphicratean reform, cf. Parke, *Mercs.*, pp.155-6; Best pp.102ff.

67. Livy 31.38.10; cf. Delbruck p.179; Hammond in Hartzopoulos & Loukopoulos (Eds.) *Philip of Macedon*, p.59.

68. A. Aymard, *REA*, 56, 1954, pp.15-36; Anderson, *MTPAX*, p.131; Parke, *Mercs.*, pp.155-6; Coussin, *Instits.*, pp.66, n.5, 68; Connie, *op.cit.*, pp.5, 25, 27ff, 31-8, 65ff; Kromayer-Veith pp.97, 116; Wilcken, *Alex.*, p.30; Burn, *G+R*, 12, 1965, pp.140ff.

69. Arr.7.23.3; cf. Demostenes on Anaximenes in Jacoby, *Fr.Gr.H.*, II, A,

No,72, F.4, pp.116-7; cf. N.G.L Hammond, *Studies in Greek History*, Oxford, 1973, p.548; Domaszewski p.26; Polyb.12.19.6; cf. Curt.3.9.12.

70. Arr.7.9; cf. Coussin, *Instits.*, p.83; C. Edson, *CP*, 53, 1938, pp.156ff; Lucan 10.48; Lock, *op.cit.*, p.30.

71. Achaea, Plut. *Aratus* 9.4.3; Beloch, *Bevolkerung*, p.157; Griffith, *Mercs.*, pp.80ff; the reform, cf. Plut.*Phil.*9; Paus.8.50.1; no.s at Sellasia, cf. Polyb.2.65.3; three tier system cf. Polyb.38.15..6; Griffith, *Mercs.*, pp.99-107; Mantinea, Polyb.11.15.6ff; cf. Plut.*Phil.*10.

72. Sparta, reform, Plut.Cleom.11.2; Griffith, *Mercs.*, pp.80ff. Rostovtzeff, *SEHHW*, p.195; Shimron, *Late Sparta*, p.50; Chrimes, *op.cit.*, pp.348ff; Cavignac, *Klio*,12, p.271; Garfouldas, *Pyrrhus*, p.448; Arist.*Pol.*2.9.16. Numbers at Sellasia, cf. Polyb.2.65.7; Plut.*Cleom.*27, 20,000 men. P. Cartledge and A. Spawforth, Hellenistic and Roman Sparta, London, 1989, p.40ff; 52; 56 (for arming helots in the Macedonian style), discuss the reasons for the reform.

73. Diod.19.85.

74. Polyb.5.65, 79-82, 103; previously a native Egyptian caste, Hrd.2.164-66; cf. Jos.*Ant.*12.9.4; Livy 33.40; App.*Mith.*87; Just.38.1; Coussin, *Instits.*, p.7; Lesquier pp.2-4, pp.11- 29, 40; Rostovtzeff, *SEHHW*, II, p.709; Launey I, p.315; Walbank, *Polybios.*, I, pp.589ff; Griffith, *Mercs.*, pp. 108, 118; Mahaffy, *Hermath.*, 1899, pp.140ff; Tarn, *CAH.VII*, p.730; Cary, *History of the Greek World*, p.405; A. Bouche-Leclerq, *Histoire des Seleucides*, p.480. The *cleruch* system is

described in Crawford, *Kerkeosiris,* p.85; Lesquier pp.192-201.

75. Seleucid military strength and sources of manpower are reviewed at, A. Bouche-Leclerq, *Histoire des Seleucides.* Paris, 1913, I, pp.476ff; Bar-Kochva, *SA*, pp.20ff; Griffith, *Mercs.*, pp.147-70; *CAH. VII*, p.169; A. Kressig, *Wirtschaft und Gesellshaft im Seleucidenreich,* Berlin, 1978, pp.32ff, 46; Launey, I, p.331ff; Tarn, *HMND*, p.70; Jones, *Greek City,* p.23; Rostovtzeff, *SEHHW,* I, pp.695ff; II, pp.422, 440ff, 472; Bickerman, *Institis.,* pp.55ff, 74-8; Schalit, *JQR*, 49, 1960, pp.289-318; V. Tschirikover, *Die Hellenisch Stadtbegrunder von Alexander der Grossen bis auf der Romerzeit,* Leipzig, 1927, pp.334-5; Edson, *CP,* 53, 1958, pp.153-168; cf. Athen.5.210, e-f, 12.527; *Fr.Gr.H.* 87, fr.10; Polyb.4.48.2-12; 5.40-7, 53.5; Strabo 11.13.6; Jos.*Ant.*1.138; Tac.*Ann.*5.8.4-5. For *katoikoi,* cf. Bickerman, *Institis.*, p.102; Launey, I, pp.669-75; Bouche-Leclerq, *op.cit.*, I, p.476; Bar-Kochva, *SA,* pp.2231; App.*Syr.*32.1; 37.1. For use of European mercenaries cf. Griffith, *Mercs.*, pp.151-3, 164; Bar-Kochva, *SA,* p.21; Bickerman, *Institis.*, p.77; I Macc.11.8; Jos.*Ant.*13.129; Just.35.2. Methods of land allotment, cf. *OGIS,* 229; *SEG IV,* 13; cf. Griffith, *Mercs.*, pp.154-5. For references to the Seleucid phalanx cf. Polyb.5.53.3, 79.45; 10.29.5; 16.18.4; 30.25.3; Ap.*Syr.*18, 32; Livy 36.18.2; 37.40.1, 7; it always numbers in the tens of thousands.

76. Daphnae, Polyb.30.25.4; cf. Walbank, *Polybios,* III, p.450; Magnesia, Livy 37.40.2; App.*Syr.*32.; *CAH. VII,* pp.169ff. gives a general military

capacity of 70,000 men, cf. Bar-Kochva, *SA*, pp.41-2. Parke, *Mercs.*, pp.209; 214 recognised native Orientals may have fought as phalangites in the Seleucid army; cf. Launey, I, p.319 who argued these were of little military value and simply impressed to pack out numbers at Daphnae, contra Tarn, *Bactria.*, p.186; cf. Griffith, *Mercs*, pp.152-3.

77. Troops return home to harvest, Polyb.2.54; 4.87; Livy 32.4. Manpower problems, settlement and population transfer, Livy 33.3.1, 9.1ff; 39.24.3-4; 40.3.3-4; 42.51.6. Cf. Walbank, *Philip.*, p.289; Tarn in *CAH.VII*, p.201. Scholars argue the economic position of the Macedonian peasantry did not change between the time of Philip II and the wars with Rome, cf. Griffith, *G&R*, 12, 1965, pp.125ff; *PCPS*, 4, 1956, p.8ff. Macedonian strength in the Third Macedonian war is recounted by Livy 42.11.6ff, 51.1ff. and Plut.*Aem.Paul.*8.5

78. Diod.19.27; 29.

79. Arr.7.22.3; cf. Ascl.6; Tarn, *HMND*, p.13.; Hogarth, *op.cit.* p.271 argued it was designed to combat cavalry in a planned central Asian campaign that never took place because of Alexander's death.

80. Paus.9.15-16; Plut.*Sulla* 18.4; cf. Griffith, *Mercs*, p.191; Droysen, *Heer*, p.154.

81. Note, however, that Arr.*T.T.*1.1 quotes his sources, one of which is a technical manual by Pyrrhus.

82. Ascl.1.2; Ael.2.7-9; Arr.*T.T.*3.1-2.

83. Ascl.2; Ael.4-8; Arr.*T.T.*6ff; Marsden, *Campaign of Gaugamela,* Liverpool, 1964, pp.65-8; Chrimes, *op.cit.*, pp. 359, 371 argued Hellenistic armies derived their organisation from Spartan models. Note the Spartan army did not call its files *lochoi,* a *lochos* was half or quarter of a *mora.*

84. Connolly, *GRA W,* p.77 based on Polyb.2.65.7; cf. Plut.*Cleom.*27.11.

85. Ascl.2.8; Ael.9.1-4a; Arr.*T.T.*10.1-3. Rustow-Kochly pp.236-7; Lesquier pp.92ff; Connolly, *GRA W,* p.76; for alternate *speirai,* cf. L. Keppie, *Making of the Roman Army,* London, 1984, pp.11-56; especially 19-23, 33-5; Kromayer-Veith p.136 it made the phalanx more flexible. Basic tactical unit much like the *syntagma.* cf. Kromayer, *BCH,* 1910, pp.521-2; Walbank, *Polybios,* I, pp.286, 541; *Philip,* p.293. In Roman service it was a cohort, Plut.*Flam.*4.

86. Ascl.2.1; Ael.4.1ff; Arr.*T.T.*7-8.

87. Ascl.4.1-4; Ael.11.1-5; Arr.*T.T.*11.1ff. Note Front.*Strat.* 1.3.1, where he implies Alexander's phalanx attacked in open order. Cf. Kromayer, "Vergleichende studiem zur Geschichte des Griechischens und Romischen Heerwesens", *Hermes Zeitschrift,* 35, pp.216ff.

88. Polyb.12.18.2, 19.7, 21.1; 18.30.3-4; other references to *sunaspides,* Ascl.4.3; Arr.*T.T.*11.4; Ael.11.4; Arr.1.4.3, 6.2; 4.17.7; 5.17.7. Tarn, *HMND,* p.28 argued this formation made the later phalanx more cumbersome. Walbank, *Philip,* p.289 argued that the formation formed at one man per one and half feet.; Kromayer-Veith pp.135-6 0.44m;

Delbruck p.433 argued the one and a half foot formation was used at Pydna, refuted by Kromayer-Veith p.358; cf. Bosworth, *HSCP,* 81, 1977, pp.248-9; Griffith, *PCPS,* 4, 1956, pp.7-10. The formations were changed by inserting other *lochoi* into the front ranks, side by side their comrades, cf. Steinwender, *Hermes,* 1909, pp.179-97; Kromayer-Veith pp.135-6; Polyaen. 4.2.2 infers that the countermarch drill could be completed in the face of the enemy. The debate over legionary frontage in this period is outlined at Kromayer-Veith pp.364-5. Proctor, *Hannibals March in History,* Oxford, 1971, p.10 argued that Polybios' *stada* equalled 177.55 metres, so if 200 phalangites (1600 + 8) occupied that frontage, each would occupy 0.88775 metres or 34.98 inches, i.e. about two *cubits,* therefore Polybios is referring to the second of the tacticians' three spacings. Some debate, however, surrounds this conclusion, see Walbank, *Polybios,* 1. 34ff.

89. Arr.2.10.2.

90. Polyb.12.21.2; Walbank, *Polybios.*, II, p.35.

91. Like a wall, Livy 31.38.10; 36.18.5; a *testudo,* 32.17.13. Delbruck p.178 believed that to advance in *sunaspides* was to court disaster.

92. Ascl.10.18; Ael.29.7, 9; 38.1-2; Arr. *T.T.*20ff.

93. Arr.7.23.3 adds that these men recieved higher pay, reminiscent of 'double pay men' in sixteenth century Landsknechte pike units, cf. C. Oman, *A History of the Art of War in the Sixteenth Century,* Reprint, London, 1987, p.78.

94. Polyb.11.12.

95. Arr.2.10.2; see above note 23; Tarn, *HMND*, p.8; may also have been used by Seleucid troops at I Macc.6.34-8, 40; Jos.*Ant*.12.371; cf. Bar-Kochva, *SA*, p.180; for similar drill cf.Xen.*Eq.Mag*.4.1-3; Arr.1.13.1-2.

96. Arr.3.13.5.

97. Ascl.11; Ael.36; Arr.*T.T*.28; modern commentators see the echeloned line as the most probable formation that was used in action, based on Epaminondas' classic oblique attack, cf. Coussin pp.78ff; E. Kahnes and J. Kromayer, *Drei Diadochen Schlachten*, Leipzig, 1921, pp.391ff; Kromayer, *AS*., IV, pp343ff, 165; Rustow-Kochly p.266.

98. For the problems reconstructing ancient battles see N. Whatley, "On the possibility of reconstructing Marathon and other ancient battles", *JHS*, 84, 1964, pp.119-139.

99. Coussin p.83; Delbruck p.82; Droysen, *Unters*., p.64; Tarn, *HMND*, pp. 13, 28; Gallili, *SCI*, 3, 1976, p.52; Hammond, *Klio*, 31, 1938, p.215. Contra is Appian's assertion that the Seleucid phalanx was on a par with that of Philip and Alexander, *Syr*.19.

100. Battle vs. Bardylus, Diod.16.4.2-7; cf. Front.*Strat*.2.3.2; Hammond, *Hist. of Greece*, p.538; Kromayer, *AS*, 2, pp.165ff. For the early period in general cf. Hammond, "Diodorus' narrative of the Sacred War", *JHS*, 57, 1957, pp.44-77; T.R. Martin, "Diodorus on Philip II and

Thessaly in the 350's", *CP*, 76, 1981, pp.188-201; J.R. Ellis, "Philip's Thracian campaign of 352-351", *CP*, 72, 1977, pp.32-39.

101. Plut.*Pel*.18; *Alex*.9; Polyaen.4.2.2; Diod.16.85.5ff; cf. Plut. *Dem*. 19.1ff; Paus.9.40.10; Strabo 9.2.37; Just.9.4.6. Numbers, Kromayer-Veith p.75. The Macedonian breakthrough, G. Soteriades, "Das schlachtfeld von Charonea und der grabhugel der Makedonen", *Ath.Mitt.*, 28, 1903, p.319 argued it was made by infantry, contra Markle, *AJA*, 1978, pp.490-1, by cavalry. The feint retreat is based on Polyaenus, cf. Hammond in Hartzopoulos & Loukopoulos (Eds.), *Philip of Macedon*, p.59. Kromayer, *AS*, II, p.165 argued Philip refused his right and wheeled his cavalry into the advancing Greek line, disrupted, one presumes, by the oblique Macedonian formation, cf. Rustow-Kochley p.266. Cf. Hammond, "The two battles of Chaeronea (338 and 86 B.C.)" *Klio*, 31, 1938, pp.186-218; Braun, "Zur schlacht bei Chaironea", *OJH*, 37, 1948, pp.88ff; Pritchett, "Some observations on Chaironeia", *AJA*, 62, 1968, pp.307-11; Tarn, *HMND*, p.13.

102. Curt.6.1.1ff.

103. Arr.1.13-16; Plut.*Alex*.16; Diod.17.19.21; Polyaen.4.3.16.

104. Arr.2.9-13; Curt.3.8-12; Diod.17.33; cf. Polyb.12.13-22.

105. Arr.3.11-16; Diod.17.53-60; Curt.4.12.1ff.

106. Arr.5.18-19; Diod.17.87-8; Curt.8.13-14; Plut.*Alex*.60; Polyaen. 4.3.22; Front.*Strat*.1.4.9.

107. Arr.1.1.9; drill and discipline is commented on by Bickerman, *Instits*, p.74; Tarn, *HMND*, p.74; Hammond in Hartzopoulos & Loukopoulos (Eds.), *Philip of Macedon*, p.59. Note the feigned withdrawl could be added, cf. note 100 above.

108. For how the Diadochi phalanx was raised cf. Briant, *REA*, 75, 1973, pp.43ff; Launey, I, pp.96, 295-6; Griffith, *Mercs*, pp.39-41; Brunt, *JHS*, 83, 1963, pp.39ff.

109. Diod.18.9.1-3, 15, 16.4, 17.3ff; Just.13.5.8; cf. Tarn, *JHS*, 49, 1939, pp.124-135; C.A. Robinson, *AJP*, 61, 1940, pp.402- 412.

110. Diod.18.20; Plut.*Eum*.4.1.

111. Diod.18.44.

112. Diod.19.29, see note 77 above.

113. Diod.19.27-8; for the battle 19.39ff; Plut.*Eum*.15.

114 Cf. Tarn, *HMND*, p.16; W. Heckel, "The Career of Antigenes", *Symbolae Osloenses*, 42, 1982, pp.57-67.

115. Diod.19.27.4ff; Plut.*Eum*.16.9; Polyaen.4.6.10, 6.13; Nepos *Eum*.15; Just.14.3-4.

116. Diod.19.82-3; cf. Just.15.1.

117. Plut.*Dem*.29.3-4; Diod.20.113; cf. Plut.*Pyrr*.4.

118. Plut.*Dem*.44; *Pyrr*.7.

119. Plut.*Pyrr*.27.3; Paus.7.8.5; Glover, *G&R*, 17, 1948, p.7 argued the

wagon and ditch were designed as an elephant obstacle; this may be so, but they also proved a formidible defence against infantry attack.

120. Polyb.2.69.3-9; Plut.*Cleom.*28; *Philop.*6; *CAH,* VII, pp.761ff; G. Soteriades, *BCH,* 34, 1910, pp.5ff; J. Kromayer, "Sellasia", *BCH,* 34, 1910, pp.508ff; *AS,* I, pp.199ff., where Kromayer argues Cleomenes designed his battle plan along similar lines to those used by Epaminondas, this writer simply cannot see how he came to such a conclusion, Sellasia being so dissimilar to any of the battles of the great Theban leader; R. Urban, "Das heer des Kleomenes bei Sellasia", *Chiron,* Band 3, 1973, pp.95fff; A. Ferrabino, "La battaglia di Sellasia", *AAT,* 54, 1918/19. pp.754ff; W.W.K. Pritchett, *Studies in Ancient Greek Topography,*II, Berkely, 1965, pp.68ff; W. Loring, *JHS,* 15, 1895, pp.25, 60ff; Leake, *Morea,* II, p.530. Plut.*Cleom.*11; cf. 7.3 where 4,000 *perioikoi* and 2,000 *helots* are armed with the *sarisa,* cf. M. Daubies, "Cleomenes III, les hilotes et Sellasie", *Hist,* 20, 1971, pp.665-93; Urban, *op.cit.*, notes that it is difficult to determine which contingents of phalanx were *sarisa* armed; Launey, I, p.12, n.7.

121. Kromayer, *AS,* I, p.228; they lower *sarisai* at Polyb.2.69; cf. Walbank, *Polybios,* I, p.272; A. Fuks, "The Spartan citizen body in the mid third century and its enlargement proposed by Agis III", *Athen,* 40, 1902, pp.246, 262ff. for the size of the *Spartiate* body in the mid-third century B.C.

122. Polyb.2.65-66.

123. Polyb.2.66.5; cf. Walbank, *Polybios,* II, p.280.

124. Polyb.2.66.10-11, 67.1; the *psiloi* reserve/supports, 66.6-7; the Achaean hoplites, 66.7; cf.4.14 Caphyae for evidence of their equipment, Sellasia pre-dates Philopoemen's reform.

125. Polyb.2.65.9

126. Polyb.2.68.5ff.

127. Polyb.2.68.9.

128. Polyb.2.68.8; note he also refers to *speirai* here, perhaps indicating a more flexible battleline than the serried ranks of *sarisaphoroi.* Note Soteriades, *op.cit.*, believed the slope was smooth and gradual, inferring it would not have disordered the phalanx. The *sarisa* phalanx, however, could suffer greatly from any unevenness of ground and certainly Polybios believed Eucleidas' men were fighting at a disadvantage because of being stationed on Euas.

129. Polyb.2.69.6; Plut.*Cleom.*28; cf. Walbank, *Polybios,* I, pp.285-6.130. Polyb.2.69.9; cf. Walbank, *Polybios,* I, pp.286-7 and his references; this may be a reference to either the use of the *sunaspides* or a deep phalanx, or both!

131. Polyb.5.64, 84.2ff; cf. *CAH.VII,* pp.117ff; Bar-Kochva, *SA,* pp.128-141; Walbank, *Polybios,* I, pp.613ff; Gallili discussed the deployment of the two armies, *SCI,* 3, 1976, pp.52ff. For topography cf. Pedech, *La Method Historique de Polybe,* Paris, 1964, pp.538ff.

132. Polyb.5.85.6.

133. Ptolemaic phalanx numbers, cf. Bouche-Leclerq p.480 (20,000); Griffith, *Mercs,* pp.108ff. - quoting Polyb.5.65.9 - (20,000); Lesquier, *Institis.*, pp.4ff, noting vast military capacity quoted by App.*Proem.*10 (25,000); Tarn, *CAH.VII,* p.730; M. Cary, *History of the Greek World,* p.403; Mahaffy, *Hermath.,* 10, 1899, pp.140ff; Meyer pp.64, n.217, 87. The equipment of the *argyraspides,* cf. Bouche-Leclerq p.480; Lesquier, *Institis.*, p.15 (heavy inf.); Droysen, pp.128, n.2, 107, n.1 (heavy inf.), nb. this conclusion appears contrary to their tactical use at p.22; Bar-Kochva, *SA*, pp.64-4 firmly concludes they were *sarisa-phoroi.*

134. Polyb.5.85.10.

135. Polyb.5.64.4ff, 79.4ff.

136. Polyb.5.85.2ff.

137. Polyb.11.11ff, 15.6-16; Plut.*Phil.*10; W.E. Pritchett, *Studies in Greek Topography; Part II: Battlefields,* Berkeley, 1969, pp.37, 66ff; J. Kromayer, *AS,* I, pp.297ff.

138. Polyb.11.15.6, 16.2; cf., 2.69; 5.85.9; App.*Syr.*19; Plut.*Aem.Paul.*19.

139. Plut.*Phil.*10.5; cf. Kromayer, *op.cit.*; Walbank, *Polybios,* II, pp.282-3.

140. Polyb.11.11.6, cf.16.7.

141. Polyb.11.11.1, 12.4; cf. Kromayer, *op.cit.* pp.292, 301; Walbank, *Polybios,* pp.283, 288. These weapons were probably the light bolt

shooter illustrated in E.W. Marsden's, *Greek and Roman Artillery*, vol.I, pp.43, 167.

142. The *cheiroballista*, cf. Marsden, *op.cit.*, pp. 4, 26, 189, 164 where Marsden confirms that artillery pieces were normally transported in a dismantled state, p.169; vol II, pp.206ff; for the Oxus crossing, cf. Arr.4.4.4; Curt.7.9.3ff; Marsden, *op.cit.*, pp.165-6.

143. Polyb.11.11.6; cf. Coussin, *Instits.*, p.83; Walbank, *Polybios.*, II, p.286 who argued the formation was supposed to make the phalanx more flexible.

144. Plut.*Phil.*9.8; cf. Polyb.11.10.11; for Nemean games cf. Plut. *Phil.*11.

145. Polyb.4.14; cf. note 71 for other references pertaining to the Achaean army.

146. Polyb.11.15.2-3.

147. Plut.*Phil.*10.4.

148. Polyb.11.15.4-7.

149. Connolly, *GRA W*, pp.140-2, especially the diagram on p.141; Delbruck pp.272ff.

150. Dion.Hal.19.12; Plut.*Pyrr.*16-17; cf. Garfouldas, *Pyrrhus*, pp.69-76; Delbruck pp.298-9.

151. Dion.Hal.20.1-3; Plut.*Pyrr.*21ff; cf. Garfouldas, *Pyrrhus*, pp.88-93; Delbruck pp.299-300.

152. Plut.*Pyrr.*21.6.

153. Dion.Hal.20.3.6; Plut.*Pyrr.*21.6-7.

154. Dion.Hal.20.1.2ff; Polyb.18.28 for 'alternate *speirai*'; cf. Coussin, *Institis.*, pp.82-3; Tarn, *HMND*, p.14. For the order of battle cf. Dion.Hal.20.1.2-5.

155. Connolly, *GRA W*, pp.105-112, the Samnites may have fought as peltasts.

156. Plut.*Pyrr.*8.

157. Dion.Hal.20.10-12; Plut.*Pyrr.*25; cf. Garfouldas, *Pyrrhus*, pp.118-121; Scullard, *The Elephant in the Greek and Roman World*, London, 1974, pp.111-115; Delbruck p.300.

158. Livy 31.38.10ff; 32.5.9, 10.11; cf. Plut.*Flam.*3ff.

159. Polyb.18.18ff; Livy 33.3-10; Plut.*Flam.*8ff; Pritchett, *Studies in Greek Topography*, vol.4, pp.133-144; cf. p.136, fig.14 for map; Walbank, *Polybios*, II, pp.572ff.

160. Polyb.18.24.3; Livy 33.8.12; Plut.*Flam.*8.

161. Polyb.18.24.3.

162. Xen.*Lac.Pol.*11.4, 8; Arr.2.8.3; cf. Polyb.12.19.5; cf. Connolly, *GRA W*, pp.44, 46 for reconstruction.

163. Polyb.18.24.9.

164. Polyb.18.24.8 (Loeb translation); Walbank, *Polybios*, II, p.582. For

forming on the crest of the hill, Polyb.24.9. It must be noted here that the Macedonian army had been training before the outbreak of hostilities, this may have facilitated the complex manoeuvres at Cynoscephalae, see page 94 of the main text.

165. Ascl.10.18.

166. Livy 33.8.14 who rode roughshod over the technicalities of phalanx drill, to make his account worthless; Plut.*Flam.*8; Polyb.18.24.8; cf. Walbank, *Polybios,* II, p.292.

167. Polyb.18.24.9; Livy 33.8.13; Plut.*Flam.*8; once more Livy's account contains grave errors, cf. Walsh. *G&R,* 5, 1958, pp.84-5.

168. Polyb.18.26.5ff; Livy 33.9.5ff; Plut.*Flam.*8; for numbers on this wing cf. Walbank, *Polybios,* II, p.583; Kromayer, *AS,* II, p.84.

169. Polyb.18.26.1ff; Livy 33.9.8ff; Plut. *Flam.* 8; cf. Walbank, *Polybios,* II, pp.583-4; Kromayer, *AS,* II, p.316, n.3; Connolly, in Hackett (ed.), *Warfare in the Ancient World,* London, 1989, pp.150-1, for a reconstruction of an aerial view of this moment in the battle.

170. Livy 32.17.4, 11, 13.

171. Livy 32.17.13.

172. Polyb.18.30.

173. Livy 35.43.6; App.*Syr.*18; Kromayer, *AS,* II, pp.220-7; Bar- Kochva, *SA*, p.15, n.24 for numbers. Topography, cf. Pritchett, *op.cit.* pp.71ff; P. A. MacKay, "Procopius' *De Aedificiis* and the topography of

Thermopylae.", *AJA,* 67, 1963, pp.241ff, pls.49-50 and map.

174. Livy 36.16.1; App.*Syr.*18; Pritchett, *op.cit.* pp.79-80.

175. Livy 36.18.5.

176. Livy 36.18.2; App.*Syr.*18; at 19 the Seleucid *psiloi* fall back through the phalanx; cf. Ascl.6.1; Arr.*T.T.*13.1.2ff; Ael.5.1; 7.4-5; 31.

177. App.*Syr.*19; note Livy implies this at 36.18.5.

178. Livy on the deployment of the phalanx around the rampart, 36.18.2; the retreat and suggestion that the phalanx's formation was like a wall, 18.5.

179. Livy 37.37-44; App.*Syr.*30-6; cf. Bar-Kochva, *SA*, pp.163ff; *SCI*, 1, 1974, p.8; Kromayer, *AS*, II, pp.154-63.

180. App.*Syr.*32; cf. Livy 38.46.2.

181. App.*Syr.*34-5.

182. Livy 38.42.4; App.*Syr.*35; cf. Bar-Kochva, *SA*, pp.167ff.

183. Livy 37.40.5-8.

184. App.*Syr.*32; 35; cf. Livy 38.42.2; Kromayer, *AS*, II, p.215 argues this formation was assumed to give the phalanx flexibility, the argument follows the line used for the 'alternate *speirai*'; contra Delbruck p.368.

185. Livy.44.37ff; Plut.*Aem.Paul.*18ff; N. G. L. Hammond, "The battle of Pydna.", *JHS,*104, 1984, pp.31-47; Pritchett, *op.cit.* pp.145ff; E. Meyer, "Der schlacht von Pydna.", *Sitz. Ber. der Berlin Acad.*, 1909,

pp.780-808; Kromayer, *AS,* II, pp.340ff for numbers.

186. Cf. Pritchett, *op.cit.*

187. Livy 44.41 compared to Plut.*Aem.Paul.*19.1-2; 20.

188. Livy 44.41.6.

189. Front.Strat.2.3.20.

190. Front.*Strat.*3.20; Plut.*Aem.Paul.*20.4; 19.1.

191. Livy 41.42.2; Plut.*Aem.Paul.*21.1.

192. Polyb.18.31.

Notes to Chapter II

1. Ascl.1.2; Arr. *T.T.*1.3; 3.1-4; Ael.2.7;9; cf. Tarn, *HMND*, p.6; *Alex*.II.6; A. Dain, *Histoire du Texte d'Elien le Tactician*, Paris, 1946, p.32-3; Best p.4; Lammert, *RE*, 19.405; 58-68 sv. *Peltastoi;* Bickerman, *Institts.*, p.55 who comments on Polyb.5.53; 16.18; 5.61.8; 68.11; App.*Syr.*17; Livy 36.18; Zonaras 9.20.5. Some confusion over the role of the peltast appears in some modern works, eg. Coussin, *Institts.*, p.67.

2. For example Thuc.2.29.5; 4.129.2; 5.6.4; 7.27.1; Xen.*Hell.*4.3.15 for mass use of peltasts by Agesilaus; cf. Best pp.17ff for "professional" peltasts; Anderson, *MTPAX*, pp.111-2 for "natural" peltasts.

3. H.W.Parke, *The Oxford Classical Dictionary*, p.707, sv. *Peltasts.*

4. Peltasts were used on both sides in the Peloponnesian War, Parke, *Mercs.*, pp.17-18; they could be hired or laid-off at short notice, Thuc.7.27ff; cf. Tarn, *HMND*, p.9; for pre- Peloponnesian War examples cf. Hrd.5.64, Cleomenes I's march on Athens as example of large area operations. The problems posed by a Peloponnesian War scenario were forseen by Perikles Thuc.1.90ff. Rough terrain combat, compare Delium (Thuc.5.63ff) to Aetolia and Amphipolis (Thuc.3.105ff; 4.102ff). Cf. H.F.Millar "The Practicle and Economic Background of the Greek Mercenary Explosion." *G&R*, 31, no.2, 1984, pp.153-160.

5. Peltasts as a "natural" troop type - Best pp.3-16; Coussin, *Institts.*, p.65. The Thracian origin of peltasts - Anderson, *MTPAX*, p.113-4;

Launey 1.397; cf. Xen.*Anab.*7.4.4; Hrd.7.75. The characteristic patterned cloak fastened around the neck, high boot and foxskin cap, in art - *ABV* p297, no.15; *CVA Danemark,* VIII, pls.324, 325, i, e, f. *CVA, USA*, VI, pl.257.1b. Peisistratus introduced Thracians to Athens, cf. Snodgrass, *AAG*, p.79. Note that Thracian peltasts have javelins in all art representations. The Greeks took up this new style of Thracian peltast, cf. Parke, *Mercs.,* p.48 n.2; Best p.12; cf. Xen.*Hell.*3.2.2;4. For a reconstruction of a Thracian peltast see Connolly, *GRA W* p.49.

6. Use of rowers as peltasts cf. Thuc.4.9.1; Xen.*Hell.*1.2.1ff; 2.4.2ff; 2.4.10-12; Parke, *Mercs.,* p.48 n.2 who has these soldiers properly organised; others see them as a rabble, cf. Hatzfeld *Alcibiade, Etude sur l'histoire d'Athenes a la fin de Ve Siecle,* Paris, 1951, p.278.; Lippolt, *Leicht.,* p.44 n.1; Best pp.36-7, Anderson, *MTPAX,* p.114. Note the peltasts are formed from sailors in the fleet, the *psiloi* are an entirely different force. Parke, *Mercs.,* p.48 n.2, the motive was to provide an alternative to mercenaries; p.18 n.3 to equip the lower classes. Xenophon has cavalry, *epilektoi* and peltasts at Hell. 1.2.7; L. Casson, *The Ancient Mariners,* London, 1960, p.100 identifies peltasts here as marines off of the fleet's ships. See Xen. *Hell.*2.4.24; Thuc.4.9.1 for use of hastily equipped *thetes* in the fighting against The Thirty. The theory that the peltast is simply a *psilos* with a shield can be found at Best pp.4, 43; Anderson, *MTPAX,* p.112. For the *pelte* see Arist.*Frag.*498., a rimless shield covered in goatskin; Parke, *Mercs.,*

pp.17-18, a round target, cf. also Kromayer, *Heer*, p.88; Anderson, *MTPAX*, p.112 n.18. Xen.*Anab*.5.2.29 has a bronze covered version. Xen.*Anab*. 7.4.17 records the incident of the Thracian caught on a fence by a shield slung on his back. In art the pelte is often depicted as made of wicker, cf. Xen.*Hell*.2.4.45; Ael.29.11-12 provide literary support. Snodgrass reconstructs the peltast at, *AAG*, pp.93ff. Griffith, *Mercs.*, p.239; 253; Launey 1.336ff; 402 give full definitions of possible equipment used.

7. Xen.*Hell*.2.4.15; Parke, *Mercs.*, p.80; Best p.7, 35, 38, 44, 103. Parke, *Mercs.*, p.54 has peltasts as "closely defined" light infantry, cf. Lippolt, *Leicht.*, p.33. For peltasts with slings cf. Xen.*Hell*.4.6.7.

8. Cf. Parke, *Mercs.*, pp.23-43 for his comments on Xenophon's *Anabasis*, eg. Pygela 409 B.C. Xen.*Hell*.1.2.1-2; cf. Best 36ff; p.44 for comments on Isocr.*Panag*.4.144. His conclusion is that peltasts were professional soldiers.

9. Diod.15.44.2-4; Loeb translation.

10. Nepos *Iphicr.* 1.3-4; Loeb translation.

11. Briscoe, *Commentary on Livy Books 31-33*, Oxford, 1973, p.142, comments on Livy 31.36.1 - Iphicrates gave impetus to peltast development and use. Kromayer-Vieth, p81; Cary, *CAH.VI*, p.48 for comment on this new type of soldier. Kromayer-Veith pp.89-90 identifies a unit of these troops at Xen.*Hell*.4.5.11-17. Best pp.85ff saw these troops as an intermediate type, as does Snodgrass, *AAG*,

pp.109-110. Other scholars see them as a forerunner of the Macedonian phalanx, cf. Anderson, *MTPAX*, p.132ff; Griffith, *Ancient Macedonian Studies in Honour of C. F. Edson*, 1981, pp161ff. Rustow-Kochly p.240, in effect the later phalanx was formed of peltasts. Fuller *Generalship*, p.42 illustrates fully the possible innovations this new type gave to warfare. Parke, *Mercs.*, p.80 points out that Diodorus (and indeed Nepos) works from the standpoint of the hoplite; the reform lightens hoplite equipment.

12. For reconstructions of the Iphicratean peltasts see J. Warry, *Warfare in the Classical World*, London, 1980, p.67. Parke, *Mercs.*, p.80; Lippolt, *Leicht.*, p.62 argue the Iphicratean peltasts were armed with both javelins and a long thrusting spear.

13. See in conjunction with note 12. Griffith, *AMS in Hon C.H. Edson.* p.166 sees this troop type as a precurser to later pikemen. Anderson, *MTPAX*, pp.129ff a conversion to hoplites. Griffith *op.cit.* p.167 suggests this new force fought at Cunaxa. Cf. Parke, *Mercs.*, p.156

14. See above p.6ff. for the debate surrounding the lightening of hoplite equipment. In this case refer especially to Best p.102; Parke, *Mercs.*, p.80.

15. Parke, *Mercs.*, p.80.

16. Parke, *Mercs.*, p.80; Lippolt, *Leicht.*, p.66. Agesilaus may have introduced peltasts into Europe in an attempt to retrain part of his army in the new tactics, cf. Xen. *Hell.*1.23; 38; cf. Best p.81.

17. Best pp.103ff. A modification to the theory that barbarians were integrated into the Greek military system has already been postulated at note 16. The normal equipment of Thracian peltasts was, according to Best, two javelins or a long thrusting spear, cf. Lucian *Dial.Mort.*273. Thracian styles of fighting were exported to Greece, cf. Parke, *Mercs.*, p.42 n.2; Best p.12; Xen.*Hell.* 3.2.2;4. For Thracian use of the *rhomphaia* cf. Lesquier p.13; Droysen, *Heer*, p.25; 26 n.3; N. Sekunda "The *Rhompaia*, A Thracian Weapon of the Hellenistic Period.", *Ancient Bulgaria*, Nottingham, 1983, pp.275-288; A. J. Reinach, *BCH*, 1910, pp.444ff; cf. Plut.*Aem.* 18.3; Livy 31.36.1; 31.39.11; 33.4.4. For the *machaira*, a traditional Thracian weapon, cf. Best p.104; cf. Xen.*Anab.* 7.4.16. For swords in general cf. Best p.104. For *sarisa* use by Thracians cf. Parke, *Mercs.*, p.156 based on Lucian *Dial.Mort.* 439. Bikerman, *Institts.*, p.55 notes how confused the Lucian evidence is, especially as to who actually wields the *sarisa*. Thracians were traditionally *akontistai* or peltasts, cf. Launey 1, p.397; Berve 1, p.136. Best p.105 argues that peltasts were created by giving *psiloi* shields, note, however, that he makes it clear he does not believe equipment was standardised, pp.103, 107. For the *pelte*, cf. Best p.7; spears, cf. Best p.7; boots, cf. Lippolt, *Leicht*, p.65 n.5. For a reconstruction of the Thracian peltast cf. Connolly, *GRAW*, p.49; Warry *op.cit.* p.49.

18. Anderson, *MTPAX*, p.130-1, cf. notes 59, 60 and 61; p.129ff; 130 n.59 for use of exceptionally long spears by foreign troops. Anderson uses

the following supporting evidence, Xen.*Anab.* 1.8.9; *Cyr.* 6.2.10; 7.1.33; cf. Hrd. 7.8.1.

19. Parke, *Mercs.*, p.80; Kromayer, *Heer,* p.86; Lippolt, *Leicht.*, p.62, 66; Kromayer-Veith p.89 date the reform to 393/2 BC. Anderson, *AJA,* 1963, p.411-3; cf. his *MTPAX,* p.130; Best p.108 accepts Diodorus' date of 374/3 BC (as paradoxically does Parke, *Mercs.*, p.81, part of a discussion over pp.79-81 where he accepts the description of the reform as recorded by Diodorus).

20. All possible instances of actual use of the new peltast are quoted at Parke, *Mercs.*, p.77. For the encounter between Chabrias and Agesilaus, cf. Diod. 15.22.23; Xen.*Anab.* 6.2.39; cf. Best p.108; Anderson, *MTPAX,* p.129 n.55; "The Statue of Chabrias", *AJA*, 67, 1963, pp 411-13; cf. Nepos *Chabrias* 1 ff; Lippolt *Leicht.*, p.66; Kromayer-Veith p.89. Lippolt, *Leicht.*, p.67 quotes a further incident at Diod.16.24.2. Best p.106 adds Leuctra to the list, Xen.*Hell.* 6.4.9. Contrary arguments can be found at Parke, *Mercs.*, p.80. Lippolt, *Leicht.*, p.67 adds the possible use of these troops in the Phocian establishment, cf. Diod. 16.29.2.

21. Parke, *Mercs.*, p.77, notes Xenophon did not mention the reform. This was because of his experience outside the mainstream of Greek warfare, cf. Anderson, *MTPAX,* p.132; Parke, *Mercs.*, p.77; his Spartan bias, Best p.107, 108 n.1; cf. *RE,* VI, sv. "Timotheus", 2. 1324. 32-35. Best p.36ff; p.38 (especially); p.44. Generally Best is astonished at

Xenophon's weakness regarding peltasts and his bad use of technical terms. Thucydides is quite exclusive in his use of the term, cf. 2.79.3-5; 4.32.3; 4.93.2. Note that Best reaches no conclusion why Xenophon acts as he does.

22. Cf. Xen.*Hell.* 6.2.39; 6.5.51-2.

23. Lippolt, *Leicht*, p.62; Anderson, *MTPAX*, p. 130; Kromayer- Veith p.89. Demosthenes episode, cf. Thuc. 3.105ff; Anderson, *MTPAX.* p.117 argues that most hoplites would have been too heavily equipped to do this, despite the light hoplite theory, supported by Anderson and discussed above.

24. Thuc.4.24ff; cf. Brasidas' tactics in 423 at Thuc.4.125.

25. Xen.*Hell.*3.4.23ff; Penguin translation; see also the fight between the Spartan *mora* and Iphicrates' peltasts near Corinth in 390 B.C., Xen.*Hell.*4.5.11ff.

26. Cf. Best p.72ff; Xen.*Ages.*1.31; Plut.*Ages.*10.3; cf. Xen.*Anab.* 7.3.44-46. Lazenby, *Spartan Army*, p.12 explains age group organisation, cf. also Anderson, *MTPAX*, p.119. Sometimes this tactic did not work, Xen.*Hell.* 4.3.22-3; 5.4.42-45; Thuc. 4.127; 4.34.1. Cf. G. B. Grundy, *Thucydides and a History of His Age*, p.272-3. Lacedaemonian troops dispised peltasts, Xen.*Hell.* 4.15-17. The Spartans may have copied this tactic from the Thracians, Thuc. 7.30.2. For its use at Lechaion cf. Xen.*Hell.* 4.5.11ff; Plut.*Peloo.* 2.1; cf. Kromayer, *Heer.*, p.89. Anderson, *MTPAX*, p.125 compares Sphacteria to Lechaion. Hoplites

are always distinguished from peltasts in ancient literature, eg. Dem.9.48ff. This ancient attitude is somewhat contrary to a modification of the light hoplite theory, Chrimes, *op.cit.*, p.367 uses Arr.*T.T.* 3.5 to argue that peltasts were light hoplites. Best p.105 supports the theory that Spartan tactics prompted the reform of Iphicrates.

27. The tacticians cite the three types of infantry at Arr.*T.T.*3; Ascl.1.2.

28. Note that in Classical times these troops were 'shield- bearers', often slaves, with no real combat role, eg. Xen.*Hell.*4.5.15.

29. Polyaen.4.9.3

30. Spendel, *Unter.*, p.35 - peltasts a hinge between cavalry and infantry; p.41 between *petzhetairoi* and *psiloi;* cf. Rustow- Kochly p.240. For links with Iphicratean peltast cf. Spendel *Unter.*, p.41; Rustow-Kochly p.147. Equipment cf. Droysen, *Heer,* p.25, 26 n3; Delbruck p.147ff; Spendel *op.cit.* p.41. The ancients are not precise in their use of the term *pelte,* cf.Tarn, *HMND,* p.16 on Livy 43.41 For the Patros coin cf. Droysen p.41-2; Spendel *op.cit.* p.41. Gabiene cf. Diod. 19.40.3; Spendel, *Unter.*, p.43; Rustow-Kochly p.342 - the *hypaspists* may be line or heavy infantry by the time of this battle. Spendel *Unter.*, p.44, this change also effected the *argyraspides.* Light *hypaspists,* cf. Kromayer-Veith p.109; Spendel *Unter.*, p.41; Berve 1.125; Parke, *Mercs.*, p.136; J. R. Hamilton, *CQ,* NS 5, 1955 , pp.218-19. Heavy *hypaspists* Tarn *HMND* pp.16-17; Griffith, *PCPS,* NS 4, 1955-6, p.3.

Coussin *Instits.* pp.66-7 *hypaspists* are peltasts. Bevan, *House of Seleucus*, p.284 quotes Polybios 7.162; 16.18.7; also Ad. Bauer, *Griech. Kriegsalter.*, p.446, the *hypaspists* were part of the *sarisa* phalanx. Lesquier p.15 is less categorical, they are probably phalanx troops. General arguments as to the role of the *hypaspists* can be found at Walbank *Philip* p.291-3; *Polybios*, II.274; 486; Tarn, *HMND*, p.6; Adcock, *GMA W*, p.26 emphasises the role as a link between infantry centre and cavalry wing. *Hypaspists* on special missions Arr.1.6; 1.8.4; 1.20.9; 1.22.4; 2.4.75; 2.23.2; 3.17.2; 3.22ff; 3.23.3; 3.24.1; 3.25.6; 3.30; 4.3.1; 4.6.3; 4.24.1; 4.27.1; 4.29; 5.12.2; 5.22.5; 6.2.2; 6.6.1; 6.22.1. *Taxeis* of phalanx on special missions Arr. 1.20.9; 2.4.3; 2.23.2; 3.23.3; 3.24.1; 4.6.3; 4.24.1; 4.29; 5.12.2; 6.6.1; 6.29.1.

31. Coussin *Instits.* p.68; Tarn, *HMND*, p.11 - largely peltasts; Parke, *Mercs.*, p.189 has peltasts forming the rear ranks of the phalanx to add extra weight and to cover any gaps caused by the fighting.

32. Arr.2.8.3.

33. Cf. Strabo 14.3.18; Polyb. 12.17.7; cf. Walbank, *Polybios* II, pp.368-9; cf. Parke, *Mercs.*, p.189.

34. Diod.19.9ff; Nepos *Eum.*8.5.

35. Diod. 19.28; for the attack cf. 19.30. There is considerable debate as to the lineage of the various *argyraspid* units of the Hellenistic period and their relationship to Alexander's *hypaspists*. For information, cf. Bikerman, *Instits.*, pp.52-3; 64-5; for references to later *argyraspids* and

*hypaspists* cf. Polyb. 7.16.2; 16.18.7; 30.25.7; Polyaenus 4.9.3; Livy 37.40.7. Diodorus mentions *argyraspids* at the Battle of Camel Fort on the Nile 19.30. Tarn, *HMND*, p.10 speculates as to the possible incorporation of Orientals in these Successor *hypaspist/argyraspid* units.

36. Lucian *Zeuxis* 8-11; cf. Bar-Kochva, *SA*, p.63; *PCPS*, NS 19, 1973, pp.3-5.

37. Polyb.2.65.2; cf. Walbank, *Polybios*, I.274. where he compares these troops to Alexander's *hypaspists;* cf Walbank *Philip.* pp.291-3. Cf. in addition Launey 1.12 n7.

38. Polyb.2.66.5; Plut. *Philop.* 6ff; *Cleom.*28ff. Plutarch makes no reference to the special combination. Walbank, *Polybios*, 1, p.280 - peltasts are used with Illyrians at Thermum, cf. Polyb.5.13.5-6, Walbank sees these troops as, however, phalanx. So too Kromayer-Veith pp.124 n.3; 133. These infantry are effected by the controversy over Alexander's *hypaspists*, cf. note 37 above. M. Daubies, *Hist.*, 20, 1971, p.683ff for role of the Megalopolitans and Achaeans.

39. Polyb.2.66.5; cf. Walbank, *Polybios*, 1, p.280; *Philip.*, p.293; Kromayer, *BCH*, 1910, p.251-2. See Polyb. 2.66.6 for the deployment of the support troops. Pritchett, *Studies in Ancient Greek Topography*, Vol.1, 1965, p.69 discusses the deployment of this flank in detail. Kromayer, *AS*, 1, p.230ff has a reconstruction.

40. Polyb.2.68.4-5.

41. Polyb.4.64.

42. Walbank, *Philip*, p.290ff; cf. Livy 44.41.1-2. Tarn, *HMND*, p.7 opposes E. Meyer, *Berlin SB*, 1909, pp.794-8 = *Kl.Schriften*. Halle, 1924, II, p.483ff who identifies these troops as the *leucaspid* phalanx. Feyel, *RA*, 2, 1935, pp.63ff notes that Philip had more *hypaspists* than Alexander. For a land grant to a *hypaspist* cf. Polyb. 18.33.1-7; Diod. 30.11; Wells, *AJA*, 42, 1938, p.252. Griffith 1981, p.319 sees these *hypaspists* as peltasts. They are part of the phalanx at Pydna, cf. Meyer *op.cit*; Kromayer, *AS*, II, p.310ff; De Sanctis, "Sellasia", *Revista storia dell' Antichita*, 1927, pp.489-91. Walbank, *Philip*, p.293 on Polyb.5.23.4 says they are not much lighter than the phalanx. Demetrius used such troops against Pyrrhus, cf. Plut.*Pyrr*.24.

43. Polyb.4.67.

44. Polyb.4.67.

45. Polyb.4.75ff; 5.8fff.

46. Polyb.5.13.

47. Polyb.4.80.

48. Livy 31.36.1.

49. Polyb.10.42.

50. Polyb.8.13-14.

51. Polyb.5.23; note in the Jewish Rule of War Book VI "peltasts had only seven javelins", cf. G. Vermes, *The Dead Sea Scrolls in English*,

London, 1962, p.131.

52. We have discussed the role of the phalanx in this battle, see above pp.95ff. For numbers cf. Livy 33.4.4-5; 37.3.3-4; Launey 1. 13 n.3; at 1. pp.100-102 Launey notes that peltast numbers may be concealed in other contingents; Walbank, *Philip*, p.292.

53. Indeed some authors see them as part of the phalanx, cf. Kromayer, *AS*, II, p.310; Walbank, *Philip*, p.292 n.2. Walbank, *Polybios*, 2, p.583 on Polyb. 18.25.3 all of the heavy infantry who had not been incorporated into the phalanx charged. This is an extension of the *hypaspist* debate, however even in Alexander's time the *pezetairoi* were distinct from the *hypaspists*; cf. Arr. 4.23.1.

54. Cf. Polyb. 18.24.8; Walbank, *Polybios*, 2, p.582 discusses this manoeuvre with reference to the phalanx only.

55. Livy 42.51.45; cf. 31.36.1; 38.5.11. Note that 2,000 were picked troops, cf. 42.51.4, the *agema*. Cf. Polyb. 5.65.2; 84- 7; Arr. 2.8.3; 3.11.9. Livy 42.51.5 has them in two *chilarchies*. Cf. Briscoe, *Commantary on Livy*, p.142; Launey, 1, pp.100-2.

56. Hammond, *JHS*, 104, 1984, map 3, p.40.

57. Livy 44.41.2.

58. Plut.*Aem.Paul.*18.3-4.

59. Hammond, *op.cit.*, p.45; cf. Plut. *Aem.Paul.* 19.1. distinguishes them from the *leucaspides* and *chalkaspides*. Hammond, *op.cit.*, p.46 includes

the *agema* in the pike formation. For the position of the peltasts cf. Pritchett, *op.cit*, Vol.4, p.162; Kromayer, *Schlachtenatlas*, Rom. Abteilung 10, Leipzig 1923, p.335-6; P.Meloni, "Perseo", *Annali dell' Universila di Cagliari*, 20, 1953, p.394. Walbank, *Polybios*, 3, p.388 has the *agema* as picked troops; cf. Plut. *Aem.Paul*,18.3.4; Livy 44.41.1 these men were separate from the phalanx, see also Kromayer, *AS*, 2, pp.335-6. E. Meyer, *Kl.Schr.* 2, p.486 n.3; Tarn, *HMND*, p.17: the *leucaspides* are the *agema* and, futhermore, they are peltasts; contra Kromayer, *AS*, 4, pp.606-8. Polybios consistently calls Antigonid guard infantry *hypaspists* or peltasts, some scholars use this evidence to argue that the Ptolemaic guard infantry, the *agema*, were also peltasts, cf. Griffith, *Mercs.*, pp.119, 319; Walbank, *Philip*, pp.292-3. For Antigonid *hypaspists* cf. Feyel, *RA*, 2, 1935, p.63-4; W. Heckel, *Symb. Oslo.*, 57, 1982, pp.55-7.

60. Livy 44.41.2.

61. Plut. *Aem.Paul.*18.4

62. Livy 42.51.4.

63. Plut.*Aem.Paul.*18.3.

64. Plut.*Aem.Paul.*21.3.

65. For peltasts cf. Polyb. 5.65.2; 5.82; 5.84.9. For *agema* cf. Polyb. 5.65.2; 5.82; 5.84.7. Cf. Griffith, *Mercs.*, p.118; Walbank, *Polybios.*, 2, pp.590-1 who has the peltasts become the Macedonian peltasts, cf.

Polyb.15.25.3. Scholars are confused as to the tactical role of the *agema*, Lesquier p.14; Droysen pp.110; 116 they were regular, light infantry, ie. *psiloi*, and that they carried the equipment of Alexander's *hypaspists*. Launey, 1, pp.100-2; 314 saw them as peltasts, but recognised the problems surrounding the reequipment and training of the Ptolemaic army before the campaign. Picked troops cf. Meyer, *Der Heerwesen der Ptolemaer und Romer*, p.64 n.214; contra W. Schubart, *Quaestiones de rubus militaribus, quales fuerint regno Largidaris*, Diss. Breslau, 1900, pp. 51ff; 59; Bouche-Leclerq p.9 n.2. Droysen pp.16-17. Meyer, *op.cit.* pp.7; 64; 86-7. they are the link between the cavalry and the phalanx. For the destruction of the *agema* at Raphia cf. Polyb. 584.9; Bar-Kochva, *SA*, p.136. For numbers of *agema* at Raphia cf. Launey, 1, pp.100-2; 197, 314. Bickerman, *Instits.*, p.68 gives the total peltast forces as 11,000 for the Ptolemies, 27,000 for the Seleucids.

66. Polyb.5.82.1ff.

67. Polyb.84.9.

68. It is clear that Alexander's *hypaspists* changed their title to *argyraspids*, cf. Bar-Kochva, *SA*, p.58; Spendel, *Unter.*, pp.35-47; Berve p.128; Tarn, *Alex.*, II pp.116-118; 151-2; 153 n.3; *JHS*, 31, 1941, p.173; Walbank, *Philip.*, p292; Griffith, *Mercs.*, p.319; Milns, *Hist.*, 20, 1971, pp.186-96; cf. Diod.17.57.2. Seleucid *argyraspids* are affected by both the *hypaspist* argument and the parallels drawn between Antigonid and other guard units, cf. Walbank, *Polybios*, 2, p.608 on Polyb.5.79.4; cf.

also Livy 37.40.7; also Polyb. 30.25.5 for the Daphnae parade. Bar-Kochva, *SA*, pp.139ff; 58ff, the Seleucid *argyraspids* at Raphia were phalangites.

69. Polybios' account is not very useful on this point. At 5.84.9 he tells us how the Greek mercenaries fell on the *agema* and peltasts. The mercenaries numbered some 5,000 men. Cf. Polyb. 5.79.9; 82.10; Walbank, *Polybios*, 2, p.614.

70. Polyb.10.29.1ff.

71. *Thorakitai*, cf. Polyb.11.11.4ff; 11.16.1; 4.12.3ff; Plut.*Philop*.9.1ff; Polyaen.6.4.3; Paus.8.50.1. Cf. Griffith, *PCPS*, 4, 1956, who sees these troops as part of the phalanx, obviously note the case of the Elburz crossing. For the *thureos*, an oval shield used by Thracians, see Plut.*Aem.Paul*.15-18; cf. P.F. Stary, "Ursprung aus Ansbreitung der einsenzeithichen ovalshielde mit spindel fosmigen Schildbuchel.", *Germania*, 59, 1981, pp.287-306 for the use of this shield in northern Europe. This type of shield can be found on the Aemilius Paullus monument, probably in the hands of a Roman. For the Sidon example cf. G. Mendel, *Catalogue des sculptures des Musees Ottomans Volume I*, 1912, pp.258; 264ff no.105; P. Perdrizet, *RA*, 4th ser., 3, 1903, p.234; L. Robert, *BCH*, 1935, p.418; Bickerman, *Institts*., pp.89-93; McDowell, *Objects from Seleucia*, 1935, p.110; M. Andronicus, "Deux steles funeraines grecques de Vergina.", *BCH*, 79, 1955, p.87-101, esp. fig.2. Bickerman, *op.cit*., calls the shield a *pelte*, Perdrizet, *op.cit*., a

*scutum*. The origins of *thureophoroi* are obscure; Droysen, *Heer.*, p.162 n.2; Bar-Kochva, *SA*, p.144 n.12 argues for a Gallic origin. Note that this troop-type was common in Seleucid service, they were used by the rebel Molon, Polyb.5.53. For a reconstruction of the *thorakites* cf. D. Head, *Armies of the Macedonian and Punic Wars*, 1982, pp.114- 5, fig.42. For a *thureophoros* cf. *Head, op.cit.*, p.114 fig.41; J. Warry, *Warfare in the Classical World*, London, 1980, p.67.

72. Polyb. 10.49ff. Cf. Bar-Kochva, *SA*, p.10 on Just.41.5.7 who has 100,000 infantry and 20,000 cavalry present. Cf. N. C. Debevoise, *History of Parthia*, p.17 n.69; P. Pedech, *REA*, 60, 1958, 17 n.1.

73. Bar-Kochva, *SA*, p.62-3; cf. p.63 for the equipment arguments that surround the Seleucid *argyraspids;* see also note 68.

74. Cf. Bar-Kochva, *SA*, p.63; 161-2; Kromayer, *AS*, II.51-3. Livy 36.18.5; App.*Syr.*18. For numbers cf. Livy 35.43.6; App.*Syr.*12, 10,000 infantry and 500 cavalry. Note that Roman *velites* would have opposed the Seleucid screen, L. Keppie, *The Making of the Roman Army*, London, 1984, pp.33; 39; cf. Livy 24.4.

75. App.*Syr.*18.

76. Livy 36.17.2.

77. Livy 37.40.14.

78. App.*Syr.*35.

79. For problems surrounding the numbers of peltasts at Magnesia cf.

Kromayer, *AS*, II, pp.181; 183 n.2; Bar-Kochva, *SA*, pp.8-9.

80. Cf. Griffith, *Mercs.*, p.80ff; Launey, 1, p.200 n.2; *IG.* ix2 1.3. ll.39-40. The military campaigns of this state were little more than raids, cf. Walbank, *Polybios.*, 1, p.460; Lucian *Dial.Mort.* 13.2; 15.1; Livy 33.3.13. Note Ptolemaic Egypt supplied the Aetolian League with 6,000 *pelte*, Polyb. 22.9.

81. Plut.*Philop.*9; Paus.8.50.1ff.

82. Cf. Launey, 1, p.397; Fieberger, *RE*, 2, 1.1072-3; G. Kazarau in *CAH VIII*, p.545.

83. Polyb.4.11ff; cf. Walbank, *Polybios.*, 2, p.461. Pritchett, *Greek Topography*, vol.4, p.120ff, discusses this battle in detail. See also Geisau, *RE*, sv. Kaphy(i)a(i) col. 1896-9; Leake, *Morea*, 3.125; Launey, 1, p.415; Griffith, *Mercs.*, pp.104; 252 n.12.

84. Note 71 above discusses this troop type. See in addition Launey, 1, pp.103 n.2; 187; 240; 415; Polyb. 4.12.3; 11.11.4; cf. 10.29. For troops in the Achaean army equipped with the *hemithorakes* cf. *IG.* ix.2; cf. Launey, 1, p.200; Snodgrass, *AAG*, p.72. H. Russell Robinson, *The Armour of Imperial Rome*, London, 1975, p.16, cites the Sidon frieze, he identifies this soldier as a Galatian mercenary or perhaps a Roman legionary.

85. Polyb. 11.11.4; cf. Walbank, *Polybios*, 2, p.285 who sees them as neither phalanx nor light troops. Cf. Launey, 1, p.415. Note these

troops were deployed and used with *akontistai*, Plut. *Philop.* 10. For general studies on the battle see Walbank, *Polybios.*, 1, pp.283ff; Pritchett, *Topography*, vol. 4, pp.66ff. Kromayer, *AS*, 1, pp.297ff supplies a map in addition, it is useful to note from this that the *thorakitai* were not necessarily on the same level as the phalanx. The *thorakitai* may have been behind other troops, including the phalanx given an extreme argument, cf. Walbank *op.cit*; Kromayer, *AS*, 1, pp.295-6.

86. Livy 37.39.9; Appian *Syr.*31. Launey, 1, pp.140-1; note that Livy commonly calls these troops *caetrati*, whereas Appian uses peltast. Did Achaean peltasts carry the *thureos*? Cf. Plut. *Philop.* 9; Paus. 8.50; cf. Bar-Kochva, *SA*, p.166-9. Livy has these troops deal with the Seleucid chariots, Appian places them behind the Italians.

87. Beloch, *Klio*, 6, 1906, pp.34-51; Feyel, *Polybe et l'histoire de la Beotie*, Paris, 1942, pp.213ff; *SEG* 9, 46 ll.14; 49 ll.1; Launey, 1, pp.151; 157; 159; 160; 240; 262; 499 (n.20; 508; 534 (n.3); 888; cf. *SEG* 354; 355; *IG* 7. 3087, ll.16- 130, 2716 Cf. Launey, 1, p.262 for widespread adoption of this troop type.

88. Cf. Coussin, *Instits.*, p.76; Launey, 1, p.219 n.2; Bickerman, *Instits.*, p.57.

89. Plut.*Aem.Paul.*19

90. Cf. Bar-Kochva, *SCI*, 1, 1974, pp.15ff; A. J. Reinach, *RA*, 1913, 1, p.23 (Pella motifs); P. Perdrizet, *Terrecuites.*, p.142 n.378; p.38. For

the Sidon friezes cf. L. Robert, *BCH*, lix, 1935, pp.428ff; BCH, ix, 1936, pp.191ff; G. Mendel, *Catal. Sculpt. Mus. Ott.*, 1, 1912, pp.258ff; Launey, 1, pp.888ff. For representations on Pergamum reliefs, cf. *A VP*, II pp.95-136; Coussin, *Instits.*, pp.1ff; 76; cf. *RA*, 1921, I, p.138-76 and 301-325; II p.43-79 for comments on this evidence. E. Pottier and S. Reinach, "Fouilles Dans La Necropole De Myrina", *BCH*, 1885, 9, pp.435-93, cf. especially p.490 and fig., here the soldier is identified as a Galatian, but he could be a *thorakitas*, cf. Snodgrass, *AAG*, p.72. Cf. Diod.5.30.2; Strabo 4.4. Note that Arr. *T.T.* 1.3 records that hoplites could be equipped with the *thureos*.

91. Galatian origin cf. Bar Kochva, *SCI*, 1, 1974, p.18, the earliest date for introduction being 279/8 B.C. Pyrrhus devoted a Gallic *thureos*, Diod.22.11; Plut. *Pyrr.* 26. Brennus' infantry are called *thureophoroi*, Diod. 22.9; Paus.10.19 describes Gauls crossing rivers on their *thureoi*. Cf. Launey, 1, pp.499 (n.20); 888; Perdrizet, *Terrecuites*, pp.97; 142 n.379; 143 n.380. In addition the *thureoi* on the Pergamum reliefs are often connected with Galatians, cf. Livy 37.39-44; App. *Syr.* 30-36.

92. For Roman guard theory cf. P. Callaghan, *BSA*, 57, 1980, p.445. The Delphi frieze, cf. A. J. Reinach, *BCH*, 34, 1910, pp.435-68 and p.549. Roman guard were present at the Daphnae parade Polyb. 30.25.5; cf. Walbank, *Polybios.*, 3, p.450. Mercenaries cf. Bar-Kochva, *SA*, p.11; Mendel, *op.cit.*, nos. 102-8.

93. Cf. Head, *op.cit.* pp.120-1; figs 52 and 53.

Notes to Chapter III

1. *Psiloi,* cf. Arr.*T.T.*2.2; Ascl.1.2; Ael.2.7; *euzonoi;* cf. Liddel and Scott, p.712; Xen.*Anab.*5.4.23; Polyb.3.35.7; 5.51.7, 61.8, 68.11; Plut.*Dem.*9; nb. also used for shieldless hoplites, cf. Xen. *Anab.* 7.3.46; *gumnetes* cf. Lippolt, *Leicht.,* n.33; Thuc.2.79.3-5; 4.32.2, 93.3. This lack of precision is all the more marked as peltast was also a term for light infantry.

2. For a general survey of 'primitive' psiloi cf. A. Ferrill, *The Origins of War from the Stone Age to Alexander the Great,* London, 1958, pp.9-20; later *psiloi* tactics are analysed at pp.179ff.

3. Hrd.9.31.

4. Thuc.3.94-98; cf. R. Meiggs and J. B. Bury, *A History of Greece,* London, 1975, pp.265-6; R. Sealey, *A History of the Greek City States,* Berkeley, 1976, pp.326-7; G.B. Grundy, *Thucydides and the History of his Age,* Oxford, 1948, are useful for the general strategic problem.

5. Cf. Lippolt, *Leicht.,* p.54, n.3 & 4; Kromayer-Veith p.87.

6. Sphacteria, Thuc.4.24ff; Lechaion, Xen.*Hell.*4.5.11-17.

7. Ael.2.7; Arr.*T.T.*1.3; Ascl.1.2; *akontistai,* cf. Xen.*Anab.*1.10. 7; *Mem.*3.9.2; Kromayer-Veith p.87; Droysen, p.18 n.1; slingers, cf. Rustow-Kochley pp.128ff; Droysen p.21. In general cf. Livy 36.18.2; Polyb.5.53.9, 79.6; 16.18.7 for the different types.

8. Payment, Launey I, p.751-3, based on *IG,* 2, IV, 1.68; *IG,* 2, IX, 1.3.

9. Bickerman, *Institis*., p.57; Launey 1, p.12.

10. Polyb.10.29.6; cf. Aristotle, *Constitution of the Thessalians*, frag.498; Anderson, *MTPAX*, p.112; Connolly, *GRAW*, p.133 for an example of a *velite*. Kromayer-Veith, p.88 n. 2 supports the shielded archer theory.

11. Livy 38.21.11; cf. 1.35; for art cf. J Boardman, *Athenian Red Figure Vases; The Archaic Period*.London. 1975. figs.90.1. 115 for some examples, this evidence is dubious at best.

12. G. Vermes, *The Dead Sea Scrolls in English*, 2nd Ed., London, 1975, p.131.

13. H.A. Harris, "Greek javelin throwing", *G&R*, 2nd Ser., 10, 1963, p.27; E.V. Gardiner, "Throwing the javelin", *JHS*, 27, 1907, p.253, pls. XVII, XVIII. XIX, XX (cavalry), it could be retained for close action; *RE*, sv. "Hasta".

14. Gardiner, *op.cit.*, pp.258-266.

15. Greek, ἀγκύλη, Latin, *amentum;* cf. Gardinier, *op.cit*, pp.249ff; Harris, *op.cit.*, p.28, pl.II; Friis Johanson, *Acta Archaeologia*, 1960, p.130, fig.3.

16. Gardiner, *op.cit.*, pl.XX.

17. Gardinier, *op.cit.*, p.258; Harris, *op.cit.*, pp.30ff, 34-6; *Greek Athletes and Athletics*, pp.95-7, quotes 300 feet as a maximum; W.E. McLeod, "The range of the ancient bow", *Phoenix*,19, 1965, p.134; *JHS*, 89, 1969, p.197; cf. Plato *Rep*.93d; *Leg*. 834d.17.

18. Effects in general cf. Livy 38.29ff. Lead bullets cf. Xen.*Anab*.3.3.6-20, 14.13-17; 4.1-18; M. Korfman, "The sling as a weapon", *Scientific American*, vol.229, no.4, pp.34-42 they outranged bows. For messages on bullets cf. A. Ferrill, *op.cit.*, pp.24-5; Connolly, *GRA W*, p.49, fig 5. Connolly, *GRA W*, p.222 for shielded slingers on Trajan's column; cf. also Livy 33.14.5; Diod.17.84.4. See also K.G. Lindblom, *The Sling as a Weapon: Additional notes to a previous paper*, Stockholm, 1940; V. Gordon Childe, "The significance of the sling for Greek prehistory", *Studies Presented to David M. Robinson*, St.Louis, 1951, pp.1-5.

19. Korfman, *op.cit*, p.39 for reconstruction, p.38 for text; D. Head, *Armies of the Macedonian and Punic Wars*, p.115, fig. 43; Livy 42.65.9. Cf. Veg.*RM*.14.20.

20. McLeod, *Phoenix*, 19, 1965, pp.1-4; *JHS*, 89, 1969, pp.197ff; "Archery in Ancient Greece", *Greek Heritage*, 1, part 3, 1964, pp.102ff; "The bowshot at Marathon", *JHS*, 90, 1970, pp.197-8, 160-175; Hammond, *JHS*, 88, 1968, pp.13-57, p.17 n. 27; Harris, *G&R*, 10, 1963, pp.34-6; P. E. Klopsteg, *Turkish Archery*, Evanston, Illinois, pp.2-3, 15, 17, 21; N.V. Sekunda, *Cretan Archers: Cretan Mercenaries abroad c. 750-27 B.C. in their Cretan and International Setting*, unpublished PhD. thesis, Manchester, 1981, p.109.

21. P. Blyth, *The Effectiveness of Greek Armour Against Arrows in the Persian War*, unpublished PhD. thesis, Reading, 1978.

22. P.E. Klopsteg, "Physics of bows and arrows", *American Journal of*

*Physics*, 2, no.4, 1943, pp.178ff.

23. Xen.*Anab*.4.2; Arr.6.10.1; cf. J. Warry, *Warfare in the Classical World*, London, 1980, p.84; D. Head, *Armies and Enemies of the Macedonian and Punic Wars*, Sussex, 1982, p.137, figs. 87, 90.

24. Blyth, *op.cit.*

25. Arr.1.15.1ff.

26. Arr.2.10.3; note at 2.6.6 Arrian reports that Darius positioned his army badly with regard to the effectiveness of its archery.

27. Arr.1.21.2.

28. Amyntas, Arr.3.27.3; Darius, Curt.5.13.16, nb. Arr.3.20ff. is not so specific; Abreas, Arr.6.10.1; Cyropolis attack, Arr.4.3.3; attack on Andromachus' detachment, Arr.4.5.6; wound in chest, Arr.6.10.1; Curt.9.5.9, 5.17; Porus, Arr.5.18.5; Agis at Megalopolis, Curt.6.1.4; Philopoemen at Sellasia, Plut.*Phil.* 6; Pyrrhus, Plut.*Pyrr*.29.

29. Eg. Arr.1.7.8-9; 3.18.3; Curt.5.3.17ff; 8.10.10; Polyb.4.71.

30. Arr.1.2.4-5.

31. Hrd.9.62.1.

32. Arr.3.23

33. Arr.4.29.3.

34. Andromachus, Arr.4.5.6ff; Pydna, Livy 42.65.3.

35. Paus.10.22, 27.

36. Livy 31.43; see also Telamon, Polyb.2.22-31.

37. Livy 37.41.2-3.

38. Curt.7.9.7ff.

39. See the Seleucid crossings of the Elburz ranges and the Porphyrion Pass, Polyb. 5.68ff; 10.28-31, 48-9; Bar-Kochva, *SA*, pp.125ff, 142ff.

40. Arr.6.10.1.

41. Arr.5.18.5.

42. Arr.2.18.19.

43. Curt.6.1.4.

44. Livy 31.39.

45. Curt.5.3.17ff; Arr.3.18.3.

46. Livy 32.17

47. Livy 34.29.2: 36.18.2; note at 33.18 flanks were specifically covered with cavalry to stop Rhodians (who were slingers, cf. 34.29.5); Arr.4.26.7.

48. Curt.10.7.18.

49. Curt.6.1.16.

50. Diod.18.40, 44; 19.29, 83.

51. Polyb.18.19ff; Livy 33.7ff; cf. Plut.*Flam*.4.

52. Polyb.2.69.

53. App.*Syr.*19.

54. Cynoscephalae, Polyb.18.24.8; Livy 33.8; cf. Kromayer, *AS*, 2, p.82; Walbank, *Polybios*, 2, p.582; Magnesia, Livy 37.46.1-8; App.*Syr.*32; Bar-Kochva, *SA*, pp.166ff; Kromayer, *AS*, 2, p.183, n.2.

55. Thuc.6.69.

56. Polyb.4.11ff, 75.

57. Demosthenes, Thuc.3.94ff; Trasimene, Polyb.3.83.1ff; Livy 22.4.2ff; cf. J.F. Lazenby, *Hannibal's War*, Warminster, 1978, p.65.

58. Arr.1.18.1-3, 19.8; 1.26, 27.8; 2.4.3, 5.1, 5.5, 20.4; 3.1.4; 3.18.1ff; 3.18.1; 3.20ff; 3.23.2ff, 24.1, 29.7; 4.6.1, 23.1, 24.1.

59. Livy 31.16.3, 24.3, 26.1, 36.1, 72.2; 34.28.8; Polyb.10.42, 49.3-4; Diod.19.39, 94, 96.

60. V.D. Hanson, *War and Agriculture in Classical Greece*, Pisa, 1983, pp.25ff is full of examples.

61. Arr.2.21.2, 7.

62. Polyb.4.67;5.68ff; 10.28-31; Livy 31.36.1. 63. Diod.19.27, 28.

64. Livy 37.40.2; App.*Syr.*32; Diod.19.40, 82.3; Plut.*Pyrr.*21.6; Polyb.5.53.4; 15.11.1; 16.18.7; App.*Punica* 40; *Syr.*18; Arr.5.15.5; Polyaen.4.3; I.Macc.6.35; cf. Lucian *Zeuxis* 8-11. Glover, *G&R*, 17, 1948, pp.1-11; Gowers, *African Affairs*, 46, 1947, p.43 misinterprets Maccabees 32; P. Goukowsky, *BCH*, 96, 1972, pp.484ff, 493; Bickerman, *Institis*, p.61; J.C. Dancy, *A Commentary on I Maccabees*,

Oxford, 1954, p.33; Bar-Kochva, *SA*, 82ff; *PCPS*, 1977, pp.1-8 for comment on Lucian.

65. Plut.*Phil*.6.

66. J.R. Hamilton, "The cavalry battle at the Hydaspes", *JHS*, 78, 1988, pp.26-31; G. Veith, "Die Kavallerie am Hydaspen", *Klio*, 8, 1908, pp.131ff; Goukowsky, *op.cit.*, p.473ff; Glover, *op.cit.*, p.5; E. Meurig-Davis, "Elephant tactics", *CQ*, n.s.1, pp.153-5.

67. Diod.19.83; Arr.5.16.4ff; Curt.8.14.28.

68. Arr.3.13.5; 5.16.4ff; Curt.8.14ff; Livy 37.41.9ff; App.Syr.32. See Bar-Kochva, *PCPS*, NS. 19, 1973, pp.3-5 for *psiloi* vs. chariots in the 'Elephant' victory reported by Lucian *Zeuxis* 8-11.

69. Arr.5.15.1ff.

70. Livy 37.41.9ff; cf. App.*Syr*.32.

71. Arr.1.6.5, 14.1; 3.9.5, 18.2, 23.2; 4.23.1, 24.1, 25.5, 26.3, 28.7; 5.20.3, 21.5; 6.6.1, 6.4, 16.1, 18.3, 21.3, 22.1, 22.3, 29.1; Livy 31.36.8; 31.42; 34.26.2, 27.2, 28.8; 37.41.9; 42.57.2, 6, 7, 8, 58.2; Polyb.2.3; 4.11; Plut.*Phil*.10; Diod. 19.30, 39, 80; Curt.5.6.12; 6.4.2, 6.21; 8.10.4. Imperial Roman armies deployed similar mixed units called *Cohortes Equitatae*, cf. Kromayer-Veith p.118; R.N. Davies, "Cohortes Equitatae", *Hist*, 20, 1971, pp.751-63.

72. Arr.3.21.2.

73. Jason of Pherae, Plut.*Mor*.590D; Pollux 1.134; Ael.16.3; cf. Snodgrass,

*AAG*, p.110. *Hamhippoi*, cf. Kromayer-Veith p.92; Delbruck p.152; Martin, *Cav.Ath.* p.410; Arist.*Ath.Pol.* 6.4.10; Thuc.5.57; Xen.Hell.7.5.24. Such a combination would have been very dangerous for other cavalry, cf. Kromayer- Veith p.93; Xen.*Hipp.*5.13.

74. Arr.1.16.1; cf. Diod.17.20.1ff. N.G.L. Hammond, "The cavalry battle of the Granicus river", *JHS*, 100, 1980, pp.73-88, esp. p.87; contra E. Badian, "The battle of the Granicus, a new look", *Anc.Mace.*, ii (Instit. for Balkan Studies), Thessalonike, 1977, p.285 n.46 believed the light infantry to be Persians.

75. Arr.4.4.7; cf. Fuller, *Generalship*, pp.117-8, 234.

76. Arr.5.14.1ff.

77. Livy 31.35, cf. 27.32.4; cf. Polyb.2.66.5, 67.1 for similar tactics by Illyrians at Sellasia.

78. Livy 26.4.

79. Polyb.18.21ff; Livy 33.7ff; Plut.*Flam.*8.

80. Livy 42.51.10; sent away 42.67.4; cf. Polyb.27.12; Livy 44.26.3; cf. Polyb.29.3; Plut.*Aem.Paul.*11.2 cf. Pritchett, *Topography*, vol.4, p.158; P.Meloni, "Persio", *Annalli dell'Universatia di Cagliari*, 20, 1933, pp.394ff.

81. Livy 42.58.1ff; cf. .6.

82. Livy 42.64.8.

83. Cae.*B.G.*1.48; 4.12; cf. Davies, *Hist.*, 20, 1971, pp.751ff.

84. Just.9.2.

85. Kromayer-Veith p.68

86. Polyb.10.49.

87. Ascl.6.1; Ael.7.4-5; 15.1; 31; Arr. *T.T.*13.1-2.

88. Xen.*Eq.*12.3; cf. Anderson, *AGH,* Berkeley, 1961, p.147.

89. Arr.1.15.1ff.

90. Arr.2.8.10, 9.1; cf. Diod.17.33; Curt.3.8.10; cf. similar dispositions at the Hydaspes, Arr.5.13.14, and Sangala, Arr. 5.23.7.

91. Plut.*Aem.Paul.*16.5; cf.Front.2.3.20; Pritchett, *Studies in Ancient Greek Topography (Battlefields),* p.147, pt.2; for a map of the area; Kromayer, *AS,* 2, pp.310-16, see map 9; *Schlactenatlas,* Rom.Abt. 10.3. Livy reported that two forces of *psiloi* clashed in close terrain, 44.4, how far this supports Plutarch is open to debate.

92. Plut.*Pyrr.*21.6.

93. Polyb.2.67.2; Plut.*Cleom.*6.3; cf. Walbank, *Polybios,* 1, pp.282ff.

94. Polyb.8.13-14.

95. Dardanians, Livy 31.43; Brennus, Paus.10.19-23; cf. Polyb.9.35; Manlius, Livy 28.12ff.

96. Polyb.4.12.

97. Plut.*Aratus* 37.2.

98. Livy 31.37; 36.18.2; Plut.*Flam.*4; App.*Syr.*19.

99. Curt.3.4.13.

100. Arr.1.28.

101. Arr.4.24.

102. Polyb.3.75.

103. Polyb.5.22ff.

104. Polyb.5.68ff; cf. Bar-Kochva, *SA*, pp.142ff.

105. Polyb.10.29ff; cf. Bar-Kochva, *SA*, pp.142ff.

106. Ascl.6.2ff; Ael.15.2ff; Arr.*T.T.*14ff.

107. Arr.4.24.9-10.

108. Livy 31.4.2; 42.57.8.

109. Ascl.6.1; Ael.51.1; Arr.*T.T.*13.1.

110. Polyb.10.30; Sekunda, *op.cit.* p.109 argues the Cretan counter-march of the tacticians was a special drill to enhance shooting ability, much like the counter-marches used by arquebusiers and musketeers of the 16th and 17th centuries, but there is no historical reference to support this rather fanciful theory, nor does the writer know of such a drill in use by bow armed infantry of any historical period.

111. Ascl.6.1; Ael.15.1; Arr.*T.T.*13.1.

Notes to Chapter IV

1. Tarn, *HMND*, p.1; for cavalry in general cf. Lammert, *PW*, sv. *ἱππεῖς*, col. 1693.

2. Tarn, *HMND*, p.4.

3. The background of the northern states is outlined in Hammond and Griffith, *History of Macedon*, pp.408-10; even Philip II used Thessalian horse, cf. Diod.16.35.5 for their importance. For Seleucid cavalry reserves cf. Bar Kochva, *SA*, p.74; Tarn, *HMND*, pp.76-83, 156-9; Bickerman, *Institis*, Paris, 1938, p.68.

4. A. Andrewes, *Greek Tyrants*, London, 1956, pp.34ff; P.A.L. Greenlaugh, *Early Greek Warfare*, 1977. On eighth century tactics cf. Hrd.1.63; 5.36; 8.28. Kromayer-Veith p.90, Sparta paid little attention to cavalry, cf. Thuc.4.55; Xen.*Hell*.6.4.10; *Hipp*. 9.4. For the large numbers of horse in the Syracusan expedition cf. Thuc.6.67.2; 64.66; 70ff; 98.1. For Agesilaus' campaign cf. Xen.*Hell*.3.4.15; 4.3.6ff.

5. Gomme, *HCT*, I.p.15. cites Thuc.1.111.1 and Xen.*Hell*.4.3.3-8, even the northern states did not possess cavalry that could attack infantry, cf. also Thuc. 4.55.2. Later they were used to prevent raids, Thuc.1.11.1; 2.27.2; 3.1.2. In battle they formed on the wings, Thuc.5.67.1; 73.1; cf. 4.93.4; 94.1; 96.5. For Athens cf. Kromayer-Veith pp.52-4, 90ff; Xen.*Hipp*.2.2; Martin, *Les Cavaliers Atheniens* in general. Cf. Kromayer-Veith pp.90ff; Droysen pp.28ff. Do not underestimate the

effectiveness of Classical cavalry, cf. Xen.*Hell.*7.5.16.

6. Hammond and Griffith, pp.43; Anderson, *AGH,* pp.140ff, p.143 for illustration; Anderson, *JHS,* 1960, pp.6-7; Kromayer-Veith pp.90ff; Xen.*Hipp.*2.2ff, 4.9; Xen. *Eq.*12.2ff. For the *spolades* cf. Anderson, *AGH,* p.142; Xen. *Anab.*3.3.20. The plate cuirass, cf. Anderson, *AGH,* p.143; Sprackhoff, *Ebert Reallexicon der Vorgeschichte,*sv. "Panzer", p.33, pl.13a; Jacobsthal, *Early Celtic Art,* pl.218b and cf. Xen.*Hell.*7.2.21 believed it normal that cavalry would wear armour.

7. Xen.*Anab.*3.4.30ff; *Hell.*4.4.10; Anderson, *MTPAX,*p.70; Martin, *Cav.Ath.*, p.407.

8. Anderson, *AGH,* p.142, pp.145-6; *MTPAX,* 41, p.123; Snodgrass, *AAG,* p.104.

9. Xen.*Eq.*12.3; cf. Rumph, *Abhandl. D. Pruess. Akad. der Wissen,* Berlin, 98, 1943, pp.1-17; Anderson, *AGH,* pp.147-8; Martin, *Cav.Ath.* p.406.

10. Anderson, *AGH,* p.150; Martin, *Cav.Ath.* p.407; Xen.*Eq.*12.11.

11. Xen.*Eq.*12.11-12; cf. Anderson, *AGH,* p.140, 150; Martin, *Cav. Ath.*, p.407; Rustow-Kochly, p.53.

12. Gomme, *HCT,* I.p.15; Martin, *Cav.Ath.*, p.401 notes that even these peoples were inferior by Persian standards (cf. Hrd.7.196); Kromayer-Veith, p.53, pp.90-93; A. Spendel, *Unters.*, p.7, cavalry were an integral part of Macedonian society; Tarn, *HMND.* p.50, p.55;

Hammond and Griffith, *op.cit.*, pp.408-10; nb. Thessalian cavalry were important to Philip II's military machine, cf. Diod.16.35.5.

13. Anderson, *AGH,* p.140; cf. Xen.*Hipp.*4.18ff. Adcock, *Greek and Macedonian Art of War,* pp.47-53; cf. Xen.*Hell.*7.1.20-22. Anderson, *MTPAX,* p.125; Martin, *Cav. Ath.*, p.401; Kromayer- Veith p.90, p.117, the Greeks did not have a shock force; Rustow-Kochly, pp.134-142. Xen.*Hipp.*8.12; cf. 3.13 for sham fight.

14. Markle, *AJA*, 1988, p.486; cf. Plut.*Pel.*32.2.7; Xen. *Hell.* 7.5.24; Diod.15.85.2-8.

15. Griffith, *Mercs.*, pp.118ff. for Ptolemaic cavalry , p.250; Lesquier, pp.12ff, pp.88ff; for Tarentines cf. Martin, *Cav.Ath.*, pp.418ff.

16. Ascl.1.3; Ael.2.11-13; Arr.*T.T.*4.1-6.

17. *RE,* sv. "δόρυ", vol.5, col.1576; Liddell and Scott, p.445, sv. "δόρυ", cf. Ascl.1.3 for Tarentines and the *doru,* for the word meaning the right, cf. Ascl.10.1; Ael.24. Alexander used one at the Granicus, Arr.1.15.5ff.

18. Liddell and Scott, p.1059, sv. "λόγχη"; cf. Plut.*Eum.*4; also 2.3, 4.3, the *lonche* was a common weapon carried by Demetrius.

19. Liddell and Scott, p.1138, sv. "ξυστόν", ; R. Lane-Fox, *Alexander the Great,* London, 1973, p.511, citing Xen.*Hell.*5.2.41; Thuc.2.100; Tarn, *HMND,* pp.71-2, not a lance but a small cavalry spear which is contrasted with a javelin; Kromayer-Veith, p.138; Hammond and

Griffith, p.413, a spear only; Spendel, pp.10-11; Kromayer, *Heer*, p.138. For Alexander's use at the Granicus, cf. Diod.17.20.4-5 (see note 18 above). P. A. Manti, "The Cavalry Sarisa", *Ancient World*, 8, 1983, pp.74-5. Bar-Kochva, *SA*, p.74, on Polyb.5.53.2; Plut.*Flam*.17.5. *sarisaphoroi* became *xystophoroi* under the Successors, cf. Markle, 1977, p.333, quoting Arr.1.14.1, 6; 2.9.2; 3.12.3; Diod.19.27.2; 27.2.

20. Liddel and Scott, p.978, sv. "κοντός"; Bosworth, *HSCP*, 81, 1977, p.234; Arr.*Ect.* 23, 31, 77; *T.T.*4.7-9. This is normally identified as a Roman weapon, Arr.*T.T.*3.2; 4.1-9; Ael.2.11- 13; Jos.*BJ*.3.96; cf. J. Baradez, *Libya*, 2, 1954, p. 12, 15, pp.122ff, 147.

21. Edson, *CQ*, 1958, p.156; Bosworth, *HSCP*, 81, p.242 believed a *sarisa* was much like a *kontos;* P. A. Manti, *op.cit*, pp.73- 80; Rustow-Kochly, p.244, say that the cavalry lance was like the *sarisa;* cf. Lesquier, p.87. Demosthenes, col.13, ll.3-7, cf. Plut.*Mor*.31b; Just.9.3.1-3 for use against Thacians; also Anderson, *MTPAX*, p.131 on Lucian, *Dial.Mort.* 22(27).439-440. *Sarisa* phalanx, cf. Arr.1.12.7; 1.14.1, 2, 6; 2.9.2; 3.7.7; 3.12.3; 3.20.1-21.7; 4.4.6; Curt.4.15.13; cf. Markle, 1978, pp.492ff.

22. Manti, *op.cit.* p.78, concludes a cavalry *sarisa* of 4.2lbs could be thrown; cf. Arr.1.2.6; 3.15.2; 5.13.3; contra Bosworth, *HSCP*, 81, p.241, who believes Arrian refers here to thrusting.

23. Markle, *AJA*, 1977, p.333 n.48; Rostovtzeff, *SEHHW*, pl.xvii; H. Furmann, *Philoxenos von Eretria*, 1931; A. Ippel, *Gnomon*, X, 1934,

pp.75ff for dating.

24. Charbonneux, *Hellenistic Art,* London, 1975, p.205, pl.99-100; Rostovtzeff, *SEHHW,* pl.xix; E. Breccia, *La Necropoli di Sciatby,* 1912, (Catel.gen.Mus.d'Alexandrie), pp.10ff, no.9, pls.xxii and xxiii; A. Adriani, *Bull.Soc.Art Alex,* XXXII, N.S.x.1, 1938, pp.112ff.

25. B. Hartzopoulos and L. D. Loukopoulos, *Philip of Macedon,* Athens, 1980, pl.49.

26. V. Graeve, *Der Alexander Sarcophag,* 1970, p.50, 52; cf. Markle, *AJA,* 1977, pp.333-4 28. Rostovtzeff, *SEHHW,* pl.lviii.

27. J. P. Peters and H. Thiersh, *Painted Tombs of the Necropolis of Marisa,* 1905, pl.vi; Rostovtzeff, *SEHHW,* p.373, pl.xliv.

28. Bickerman, *Institts*, p.93; I. Vendikov and T. Gerrasimov, *Thracian Art Treasures,* Sofia, 1975, pl.346-7, 348-9; Charbonneux, *Hell. Art,* p.348, pl.383. For Bactrian coins cf. Seltman, *Greek Coins,* London, 1933, pl.55, no.5.

29. M. I. Rostovtzeff, *SEHHW,* pp.330-331; Sokolov, *Antique Art on the Northern Black Sea Coast,* Leningrad, 1934, no.1162; Minns, *Skythians and Greeks,* p.304, fig. 218; p. 314, fig. 224; p.319, fig 230; O. Gamber, 'Dakishe und Sarmatische waffen Auf Den Reliefs Der Traianssaule', *Jahrbuch der Kunsthistoricher Sammerlung Wien,* 60, 1964, p.30, fig. 35; I. Barradez, *Tipasa; Ville Antique de Mauretanie,* Algiers, 1952, pp.19-20, fig.8; Markle, *AJA,* 1977, p.346, this derives

from Sarmatian practice.

30. Markle, *AJA*, 1977, pp.333, 337, at p.338 he emphasises the advantage of the first strike cf. Manti, *op.cit.*; see above p.20 for how the infantry *sarisa* was held. For the origins of the cavalry *sarisa* cf. Markle, *AJA*, 1977, p.337; B. V. Head and R. S. Poole, *British Museum Department of Coins and Medals, Macedon*, p. 156, nos. 1-5; Head, *op.cit.* p.163. Markle, *AJA*, 1978, p.483 argues that the cavalry *sarisa* was first used at Chaironea.

31. Markle, *AJA*, 1977, pp.335-6; Manti, *op.cit.*, p.32.

32. Arr.1.15.1ff.

33. Bosworth, *HSCP*, 81, p.234; Tac.*Ann*.1.79-2-3 for charging Steppe lancers; Markle, *AJA*, 1977, p.334 makes little of the lack of stirrups. Cf. L. White, *Medieval Technology and Social Change*, Oxford, 1962, chapter 1; Tarn, *HMND*, p.75; E.H. Minns, *Skythians and Greeks*, p.75; Rostovtzeff, *Iranians and Greeks in Southern Russia*, p.130; cf. p.121, p.250 for Hunnic stirrups; S.W. Bushell, *Chinese Art*, 2nd Ed., 1910, vol.I, p.22. Note lack of stirrups would have prompted different mounting techniques, cf. Curt.6.5.18; Xen.*Eq*.6.16, 7.1-3; Pollux 1.213. Cf. J. C. Coulston, 'Roman, Parthian and Sassanid Tactical Developments.', *The Defence of the Roman and Byzantine East, BAR* 297, 1986, pp.64ff.

34. Markle, *AJA*, 1977, pp.333ff.

35. Gardiner, *JHS,* 27, 1907, p.260; cf. Markle, *AJA,* 1977, p.334.

36. Xen.*Eq.*12.12.

37. Arr.1.15ff; cf. Hammond and Griffith, *op.cit.* p.413.

38. Garfouldas, *Pyrrhus,* p.426; Gamber p.11; Kromayer-Veith p.109. That the Diodochi added the shield cf. Bar-Kochva, *SA,* p.74; Launey, I, p.356; Snodgrass, *AAG,* p.122. For Tarentines, cf. Spendel, *Unter.,* pp.93ff; Rustow-Kochly p.242. Bickerman, *Institis,* p.93; McDowell, *Objects for Seleucia,* 1935, p.110, quotes Seleucid shielded terracottas. For the Aemilius-Paulus evidence cf. H. Kahler, *Die Fries von Reiterdenkamal des Aemilius Paulus im Delphi,* p.34; A.J. Reinach, 'La Frise du Monument de Paul-Emile a Delphes.', *BCH,* 1910, 34, pp.433-68, in particular, elements of Perseus' Macedonians at pp.434, p.437, 467, the trooper on the northern face is a Macedonian, the rest Thracians.

39. Arr.1.6.5; cf. Bosworth, *Comm.on Arr.,* p.72; Ad. Bauer, *Kriegsaltertumer,* p.432; Kromayer-Veith p.109; cf. Arr.4. 32.2. For the tradition of shield-bearers cf. Arr.1.11.7-8. For the Darius pursuit evidence cf. Arr.4.32.2; Anderson, *MTPAX,* p.146 with the reference to Xen.*Hipp.*12.5

40. Plut.*Alex.*16; Diod.20.3; cf. Kromayer-Veith p.109; Delbruck, I, p.183 who contest this; cf. also Diod.21.2; Arr.1.11.7-8; 6.4.3 for arms robbed from temple.

41. App.*Syr.*32; cf. Launey I, p.319.

42. Polyb.6.25.1-11.

43. A.J. Reinach, *BCH,* 1910, 34, pp.434ff, 437, 439, 459: S. Reinach, *RA,* 1889, 1, p.319.

44. Ael.2.12; Ascl.1.3; Arr.*T.T.*4.4; Stadter, *CP,* 72, 1977, p.123.

45. Cf. note 39 above, especially Launey.

46. For Celtic equipment cf. P. Coussin, *Les Armes Romaines;* Paris, 1926, pp. 4, 68, 69, 214-217, 221-225, 234, 240, 242, 269, 304, 324, 337, 386, 395, 378, 431, 465. For the *scutum* being similar to the *thureos* cf. Couissin, *op.cit.*, pp. 57, 66-69, 144, 237, 240, 242, 244, 246, 253, 272, 317, 519. For barley corn bosses cf. Bar-Kochva, *SCI,* 1, p.18.

47. For the Boeotian helmet cf. note 9 above. Also Snodgrass, *AAG,* pp. 94, 125, pl.58; P. Connolly, *GRAW,* p.73 ; Gamber, *op.cit.* pp.9-10; *BCH,* 1902, p.7-8; Reinach, *BCH,* 1910, pp. 34ff; Frazer and Rone, *Boeotian Tombstones;* London, 1952, pp.66-68, pl.1.1, 4; Rumpf, *Abhandl. D. Preuss. Akademie Der Wissen,* 1943, no.98, pp.1-17; Launey, 1, p.159ff; Anderson, *AGH,* p.145 and refs. Cf. Xen.*Eq.*12.3; also Aelian, *VH,* 3.24; Pollux 1.149; Demost.59, 94; Theophr.*HP.*, 3.9.8.

48. Bar-Kochva, *SA*, p.74 for a coat of mail; Kromayer-Veith p.109; H. Seitz, *Blankwaffen I,* Braunshung, 1963, pp.66ff; J. Becker, *Grabschrift eines Panzereiteroffiziers;* Frankfurt-am- Main, 1868, pp.23ff; Gamber,

*op.cit.*, pp.10-11; Anderson, *AGH*, pp.143ff and refs. Cf. Plut.*Phil*.6; *Alex*.32, 33; Arr.5.1.4.

49. Theoc.Id.15.6; Just.38.10.1; Val.Max.9.4, exc.4.

50. Xen.*Eq*.12.5; Plut.*Luc*.28; Gamber *op.cit.* p.10; Anderson, *AGH*, pp.148-50; Rumph, *op.cit.*, p.6, notes 3 and 4; Lorimer, *BSA*, xlii, 1947, p.132.

51. Xen.*Eq*.12.11; cf. Connolly, *GRAW*, p.98, fig.13 ; Arr.1.15 for fighting with the butt spike.

52. Polyb.16.18.6, 8; 31.3.9; App.*Syr*.,32; Livy 35.48.3; 37.40.11; Bikerman, *Institts*., p.60; Launey, I, p.539ff; Tarn, *HMND*, p.73; Rostovtzeff, *Excav. Doura IV*, 1933, p.217; Gamber, *op.cit.*, p.13; Bar-Kochva, *SA*, p. 69 who highlights the possible differences in equipment between various parts of the Seleucid cavalry corps, based on Livy 37.40.11. The tacticians record cataphracts at, Ascl.1.3; 2.11-13; Arr.*T.T.* 4.1

53. Xen.*Anab*.1.8.7; *Cyr*.6.1.50-51; 7.81.2; also cf. Julius Valerius 1.53; Propertius 3.12.11-12; Vergil *Aen*.11.76ff. Tarn, *HMND*, p.73; Bar-Kochva, *SA*, p.74, it was this Oriental influence that led to the adoption of this troop type by the Seleucids, based on Polyb.30.25.6 and reference to Nisaean horses, cf. Tarn, *HMND*, pp.76-83, 156-9.

54. Cf. F. Sarre, *Die Kunst des alten Persian*, pl.lxv; E.Cumont, *Fouilles de Doura Europos*, 1922-23, pl.xcix; A.D.V. Bivar, 'Cavalry Equipment

58. Paus.1.21.6; Rostovtzeff, *Doura Europos,* vol.6, p.445; cf. Plut.*Crassus* 24; *A VP II,* 1885, pl.43, cf. text p.103; Tac.*Hist.*1.79; Curt.3.11.15 (nb. cf. Fears, *op.cit.* with this reference); Amm.Marc.16.10.18; 17.12.2; Claudian *in Rufinus,* 2.357-8; Arr.*T.T.*4.1. For felt armour cf. Maurice *Strat.*11.2.7; Coulston, *op.cit.* p.70.

59. Tarn, *HMND,* pp.77-8; Strabo 11.525; Hrd.3.106; Bickerman, *Institts.*, p.60; Polyb.31.3.6. Tarn believed Nisaean horses were actively developed by the Seleucids to mount their cataphract arm. For use of horse armour by Classical Greek cavalry, cf. Anderson, *AGH,* p.149; Darembert, *Saglio Lafage Diction. des Ant.*, sv. *Frontale;* Xen.*Anab.*1.8.6-7; Arr.*T.T.*4.1; for chariot horse armour cf. Xen.*Cyrop.*6.4.1. For the *perizeuma* cf. Anderson, *AGH,* p.149 n.4; Xen.12.8. Anderson, *op.cit.*, believed the horse of ths period was too small to be armoured, contra Kromayer-Veith p.139, n.3 who argues that horse armour was introduced into the Athenian army, on the urging of Xenophon, cf. *Eq.*12.

60. Gamber, *op.cit.* p.12 gives a good account of the horse armour on the Pergamum reliefs.

61. Xen.*Eq.*12.5; Gamber, *op.cit.* p.12; Anderson, *AGH,* pp.148-50; Rattenbury, *op.cit.* p.114; Plut.*Luc.*28.

62. D. Head, *Armies of the Macedonian and Punic Wars,* 1982, p.118, fig.48; Gamber, *op.cit.* p.27.

63. Livy 37.40.11; Rattenbury, *op.cit.* pp.113-4; Coulston, *op.cit,* pp.67, 88;

Gamber, *op.cit.* p.24.

64. Coulston, *op.cit.*, pp.60-1; 66-7.

65. See above pp.202ff.

66. Coulston, *op.cit.*, pp.68-70; R.C. Smail, *Crusading Warfare*, Cambridge, 1956, pp.75ff; P. Medinger, 'L'Arc Turquois et Les Arches Parthes a la bataille de Carrhe.', *Rev.Arch.*, Vol.II, 6th Ser., 1933, pp.227-234; Plut.*Crassus*, 24ff; E.V. Cerrenko, *The Skythians 700-300 BC*, London, 1983, p.12 argues that the rate of fire for a horse archer was 10-12 arrows per minute; O.J. Maecher-Helfen, *The World of the Huns*, Berkeley, 1973, pp.201-258; Bosworth, *HSCP*, 81, 1877, p.234; Arr.*T.T.*4.3; 4.7; 11.2; 44.1; M. I. Rostovtzeff, 'The Parthian Shot.', *AJA*, 1943, 47, 2nd Ser., pp.174-182; Hrd.4.46, 70, 127; Tarn, *HMND*, p.50; W.W. How, *JHS*, 43, 1923, p.117ff; Bickerman, *Institts.*, p.60; cf. App.*Syr.*32; Livy 37.40.8; 35.40.8; 35.48.3; E. Darko, 'Influences Touraniennes sur l'Evolution de l'Art Militaire des Grecs, des Romaines, et les Byzantins.', *Byzantion*, 1935, pp.450ff; E.H. Minns, *Scythians and Greeks*, pp.54, fig.8; 55, fig.9; 59, fig.12; 61, figs.13 and 14; 162, fig 49; 70; 200, fig.93; pp.66-88 for bows.

67. Cerrenko, *op.cit.*, p.12; cf. Plut.*Crassus* 25.

68. Cerenko, *op.cit.* p.14; Arr,4,4,6.

69. Paus.1.21.6; cf. Coulston, *op.cit.*, p.70.

70. See above note 67.

and Tactics on the Euphrates Frontier', *Dumbarton Oaks Papers*, 1972, no. 26, pp.271ff; Webster, *The Roman Imperial Army*, 3rd ed., London, 1985, pp.153ff; Gamber pp.13ff; Rostovtzeff, *Doura Europos*, 6, p.445; H.H. Russel Robinson, *Oriental Armour*, London, 1976, pp.5-7; J. F. Haldon, 'Some Aspects of Byzantine Military Technology from the Sixth to Tenth Centuries.' *Byzantine and Modern Greek Studies*, 1935, pp.11-47; J.W. Eadie, 'The Development of Roman Mailed Cavalry.', *JRS*, 57, 1967, p.163ff. Cf. *CIL*, XI, 5632. Plut.*Luc*.28; Tac.*Hist*. 1.79 records that Sarmatian cataphracts were helpless if unhorsed; Verg.*RM*.3.23.

55. Kromayer-Veith p.139 n.3 believes Persian influence caused the Athenians to introduce this troop-type into their army; cf. Xen.*Cyr*.6.4.1; 7.1.2; *Anab*. 1.8.7; Gamber *op.cit.*, p.11.

56. Polyb.16.17.6; Livy 37.40.6, 11; cf. Hrd.1.215; Ael. *Aeth*. 9. 15; Xen.*Cyr*.6.4.1; 7.1.2; Plut.*Luc*.28 for unprotected inner leg; Tac.*Hist*.1.79; Amm.Mar.16.10.8; Sal.*Hist.Frag*.4.66; Rattenbury, *CR*, 1942, 56, p.113.

57. For full armour and its complete protection cf. Gamber, *op.cit.* p.10. fig.2; p.22, fig.22; p.25; Ghirshman, *Iranians, Parthians and Sassanians*, London, 1962, p.63-6; cf. Zos.1.50; Amm.Marc.16.12.38; J. Rufus Fears, 'The Date of Q. Curtius Rufus.' *CP*, 1976, 71, p.222. For horse half-armour cf. Bar-Kochva, *SA*, p.75; Livy 37.40.11 based on Perg. reliefs for the Seleucid guard; Bivar, *op.cit.*, p.11.

71. Fuller, *Generalship*, p.115ff; Arr.4.5.

72. Gamber, p.13; Bickerman, *Institts.*,p.69; Tarm, *HMND*, pp.76-8; 156-9; cf. R. Syme, 'The Argonautica of Valerius Flaccus.', *CQ*, 23, 1929, pp.129-137; Rattenbury, *op.cit.* p.115.

73. Xen.*Hipp*.3.4.13ff; *Eq*.8.10.3; 12.13; *Hell*.3.4.13ff; 4.3.5; 5.4.39-40; *Cyr*.6.2.16; *Ages*.2.2-5; Plut. *Artaxerxes* 9.1-3; Hrd.9.20ff. For art cf. Anderson, *AGH*, pp.150-2; Beazley, *Developments in Attic Black Figure Ware*, pp.96-7.

74. Kromayer-Veith p.110; *Cat.Brit.Mus.*, 10, Thessaly nr.11; Droysen, *Unters.*, p.43.

75. P.Gardner, *Types of Greek Coins*, Cambridge, 1883, pp.121ff; cf. pl.V, contra cf. pl.V, nos. 34-6; Pritchett, *Topography*, vol.4, p.66, n.144 quoting Arr.*T.T*.4.5; 18.2; Walbank, *Polybios*, I, p.159 on Polyb.4.77.7; 16.18.7; Livy 35.20; I.L. Merker, 'The Ancient Kindon of Paionia.', *Balkan Studies*, 6, 1965, p.45.

76. Tarn, *Alex.*, II, p.157 quoting Arr.2.8.9; Hammond and Griffith, *op.cit* p.413 contrast the *sarisa* with the *xyston;* Bickerman, *Institts.*, p.93; Kromayer-Veith p.139 on Diod.19.39 for Median use of the lance; Markle, 1977, p.333 vs the Skythians at Arr.4.46. The Granicus example is at Arr.1.14.1ff.

77. Kromayer-Veith pp.100-1; cf. 100, n.7; 110, *prodromoi* have leather armour, note the difficulty, however of equating weight of armour

directly with tactical function.

78. Anderson, *AGH,* p.145 believed Classical cavalry were not organised into light and heavy bodies; cf. Martin, Cav.Ath., p.406. Cf. further Kromayer-Veith pp.52, 90; Xen.Hipp.1.2; *Ath.Pol.*61.4; Thuc.2.2.2.

79. Kromayer-Veith p.100; Droysen, *Unters.*, p.241; *Alex. Armee.*, p.237; *Heer.*, p.135; Spendel, *Unter.*, pp.10, 17; Lort- Serignan p.27; Berve I, pp.105-6, 129, 177; Hammond and Griffith, *op.cit.*, p.411; Griffith, *G&R*, 12, p.129; Brunt, *JHS*, 83, 1963, p.27; Milns, *Hist*, 20, 1971, p.167; Tarn, *Alex.*, I, pp.155-8, 160, 162, quoting Arr.6.14.4; Lock, *Army.*, pp.36-47; Momigliano, *Athen.*, 13, p.11; Bosworth, *HSCP*, 81, pp.247-8; *CAH,* VII, pp.169-171; Lesquier p.90; Rustow-Kochly p.255; Lammert *RE*, sv. ἴλαί, 997=466; Diod.17.17.4; 19.28.3; 19.29.5; Ascl.7.11; Arr.*T.T.*18.2-3; Polyb.10.23.1-6. Elite cavalry units like Alexander's *ile basilike* are common, cf. Polyb.5.53.4; 10.49.7; 16.8.7; 19.7; 31.3.7; Bar-Kochva, *SA*, p.69; Bikerman, *Institis*, p52, cf. Polyb.5.81, 85; 301.3.6; Livy 38.40 *(regia alae),* Polyaen.4.6; Bikerman, *op.cit.* p.59 also discussed the *agema,* cf. Polyb.10.49.3; 37.3.7; Livy 33.40.6; App.*Syr.*32; Diod.33.49. The *ile* was also used by Seleucid line units. Bar-Kochva, *SA*, p.67 Seleucid organisation was based on Alexander's. Alexander's reforms of organisation cf. Berve pp.104, 120, 129; Tarn, *Alex.*, II, pp.139, 154-67; Brunt, *JHS*, 83, 1963, pp.24-45; Griffith, *JHS*, 83, 1963, 68-74, Milns, *Hist.*, 20, 1971, p.193; note Alexander's reform kept *ilai* as part of the *hipparchy* structure, cf.

Arr.7.21.3. Generally on Alexandrian organisation cf. Lock, *op.cit.*, pp.36-42; Berve, I, pp.134ff; Hammond, *Mace*, pp.431ff; Strabo 7 fr.10, Curt.8.2.6.

80. Kromayer-Veith p.101, cf. Arr.1.2.5 , 12.7; 2.9.3, 11.2; 3.11.8, 10. Kromayer-Veith p.101, n.6 for Greeks in *ilai* under Macedonian officers, p.137 for Thessalians organised in *ilai*. Diod.17.33.4; cf. Hammond and Griffith *op.cit.* pp.411ff; Brunt pp.32-6; Lock, *Army.*, p.26 on Curt.6.2.6. For the royal *ile* cf. Lock, *Army.*, pp.37ff; Hammond, *Mace.*, p.431; Berve I, p.105; Momigliano, *op.cit.*, p.11; Tarn, *Alex.*, II, p.155; Griffith, *G&R*, 12, p.129; Strabo 7 fr.10.

81. Diod.19.27, 28.3, 29.5; cf. Tarn, *Alex.*, II, p.162.

82. Polyb.16.23ff; Livy *(alae)* 31.3.3; 31.31; 42.55.8, 57.7, 58.14; (*turmae*) 33.7; 34.34.6; 37.41.9.

83. Ascl.7.1; Arr.*T.T.*18.2-3; Stadter, *CP*, 72, p.124 a *hipparchy* of 512 men called an ἴλη by the Romans, this may be a reference to an *ala quingenaria* cf. Arr.*Ect.*1; R. Forster, *Hermes Zeitschrift*, 12, 1977, pp.426-449, 471. also Arr.*T.T.*18.2-3.

84. *RE*, sv. *Hipparchia*, 8, col. 1662-3; Diod.17.57.1; 19.28.4; Plut.*Eum.*7; Arr.3.11.8; 3.27.4; 4.22.7, 23.1, 24.1; Lock, *Army.*, pp.68ff; Tarn, *Alex.*, II, p.161; Droysen, *Unter*, p.23. Kromayer-Veith p.130 note *hipparch* is a common Greek cavalry officer, cf. Polyb.10.23.4; 20.5.8; 22.15; Livy 37.11; Thuc.4.72.4 Arist.*Ath.Pol.*61.4; *Pol.*8.94; Xen.*Hipp.*3.6.11. For Ptolemiac numbered *hipparchies* cf. Kromayer-

Veith p.127. Bar-Kochva, *SA*, p.106 on Polyb.10.21.3; 18.19.9 a *chilarchy* is two *hipparchies* of 512 men.

85. Arr.3.27.4, 29; 4.24; Diod.17.65.1; Lock, *Army.*, pp.62, 68ff; Beloch I, p.106 n.1. For political motive cf. Brunt, *JHS*, 83, pp. 29, 31; Tarn, *Alex.*, II, 161. Note the *ile* is still used, Lock, *Army.*, pp.69, 82 based on Arr.6.21.3. Tarn, *op.cit.*; Griffith, *JHS*, 83, p.73 n.16 believed division into *hecatostyes*; cf. Lock, *Army.*, p.83. Two *lochoi* per *ile* in the reform, cf. Kromayer-Veith p.100; Droysen, *Unters.*, p.23.

86. For tactical/strategic motive cf. Lock, *Army.*, pp.70-2.

87. Arr.4.16.2ff.

88. Polyb.10.22.

89. Lesquier, *Institis.*, pp.12ff.

90. Ascl.7.10; Ael.20.1; Arr. *T.T.*18.

91. Droysen, *Unters.*, p.23 a cavalry command; Bar-Kochva, *SA*, p.106; cf. Polyb.10.21.3; 18.19.9; Tarn, *Alex.*, II, p.161; Kromayer-Veith pp.127ff; Walbank, *Polybios*, II, p.227; Lort- Serignan p.27. Lesquier p.88 on Polyb.5.63.5 a 700 strong Ptolemic *hipparchy*. *CAH*, VII, p.170. Feyel, *Polyb.*, pp.213ff quoting *IG* VII.3087, argues for third century Boeotian *hipparchy* with *ilai* as lower organisational level; cf. Kromayer-Veith p.66. The 1,000 strong *hipparchy* is common in modern works, cf. Bar-Kochva, *SA*, p.73 on Polyb.30.25.8; Tarn, Alex., II, pp.161ff; Rustow-Kochly p.255; cf. Arr.4.24.1; 5.13.4; 6.21.3.

Bar-Kochva, *SA*, p.68 based on Livy 37.40.6, 10; App.*Syr.*32; Polyb.30.25.8 believes Seleucid units fought in many of their greatest battles organised in 1,000s; cf. E. Galilli, 'Raphia, 217BCE, Revisited.', *SCI*, 3, 1976, p.52. Bikerman, *Institts.*, p.52 for 2,000 strong Seleucid guard cavalry, pp.64, 94 that Seleucid used *hipparchies* cf. Rostovtzeff, *REA*, 1931, p.12; Phelgon 257 fr.36C3; cf Minns, *JHS*, 25, 1915, p.31 for the Avroman parchment. Griffith, *Mercs.*, chap.VII for Pergamene use of hipparchies.

92. *Lochoi*, Ascl.2; Arr.*T.T.*10.1; Ael.4.1-3; 5.1-2; *dilochoi*, Ascl.2.8; 9.1-4; Arr.*T.T.*10.1; Tarn, *Alex.*, II, p.100; Lock, *Army*, pp.57ff, 62; Beloch I, p.100, n.1; Griffith, *JHS*, 1963, pp.68ff. Tarn, *Alex.*, II, p.161; Bar-Kochva, *SA*, pp.166ff an *hekatosis* of 100 men based on Arr.6.27.6. Rustow-Kochly pp.252, 255, 250 men. Spendel, *Unters.*, p.8; Kromayer-Veith p.103 half an *ile*, cf. Arr.3.16.11. A unit of manoeuvre Polyb.10.23.4. On Arr.6.27.6 cf. Bosworth, *Comm. on Arr.*, p.320; Curt.5.2.9. Motive for introduction cf. Tarn, *Alex.*, p.160. Lock, *Army.*, pp.62ff for relationship to *ile*. Lesquier p.91 in the Ptolemaic army a *lochos* is a sub-division of an *ile*; cf Wilken, *Alex.*, p.144 on Arr.*T.T.*12.3. Droysen pp.60, 67, 81, 110, in the Antigonid army the *lochos* only appears as an infantry unit. The *tetrarchy* cf. Bosworth, *Comm. on Arr.*, p.376 on Arr.3.18.15; Lock, *Army.*, pp.64ff; Plaumann p.66 equals two *ilai* and links its introduction to the *lochoi* reforms; Berve I, pp.106 n.4; 107 n.2 quotes the Sudia believing there to be four

units in this formation; cf. Arr. *T.T.*10.1 where a *tetrarchy* equals four *lochoi,* an infantry formation.

93. Polyb.10.23.4-7.

94. Polyb.10.9.21, 21.3, 23.4.; 18.19.9; Plut.*Phil.*7.3; Livy 35.7; Walbank, *Polybios,* II, pp.227, 573, 580, 10 *turmae* equal 300 men; cf. Kromayer, *AS,* II, p.79, n.2. Kromayer- Veith p.138, smallest tactical unit; Lesqieur p.90 equal to a *turmae* or 80 men; Brunt, *JHS,* 1963, pp.27-44.

95. Polyb.10.29.

96. Polyb.2.32.6; 18.25, 28.10 refers to a small formation like a Roman maniple.

97. Arr.7.23.3; cf. Droysen, *Unters.*, p.14; Lesquier p.91 on *P.Hib.*1.30, ll.13e and *P.Tebt,* 107, col.II, l.1; Xen.*Cyr.*2.1 a cavalry unit; Polyb.6.25.2 for a Roman *decurion.*

98. Lock, *Army.*, p.62.

99. Polyb.5.65ff; Diod.19.83.

100. Kromayer-Veith p.104, n.3; Rustow-Kochly p.255; Droysen, *Unters.*, p.23; Arr.7.6.3.

101. Seleucid, Bar-Kochva, *SA*, p.75 n.73-5; Edson, *CP,* 53, 1958, p.153; Bevan, *House of Seleucus,* I, p.325; Minns, *JHS,* 25, 1915, pp.22ff. Ptolemaic, E. Van't Dack, *JJP,* 29, 1983, p.89; Meyer p.36ff; Griffith, *Mercs.,* pp.110ff; Lesquier pp.12ff, Appendix I pp.291ff.

102. Markle, *AJA*, 1977, p.338 believed cavalry could break a phalanx, note he contradicts himself a page later. Ascl.7.4; Arr.*T.T.* 16.6 record cavalry could not break infantry. Note Lesquier p.11 and Droysen pp.153-4 who believed cavalry diminished in importance at the end of the second century.

103. Kromayer-Veith p.138. The question as to whether the Roman army inherited its organisation from the Hellenistic armies is addressed by A.K. Lawson, 'Zu Den Romischen Reiterspielen.', *Archaologisches Korrespondenzblatt,* 10, 1980, pp.173-184.

104. Kromayer-Veith p.138 n.3.

105. Ascl.7.2; .4; Ael.18.1-3; 18.5-9; Arr.*T.T.*16.6-8, 9-14 it allows a formation to hit the enemy in an ordered mass; cf. Xen.*Hipp.* 3.9. Cf. Lort-Serignan p.25.

106. Xen.*Hell.*3.4.13; *Hipp.*2.2-4; cf. .*Cyr.*2.2.30; 8.1.14; Polyb. 12.18.3; cf. Kromayer-Veith p.138 accept eight deep as the standard. Note these formations are deep by the standards of later periods, cf. C. Duffy, *The Military Experience in the Age of Reason,* London, 1987, p.222.

107. Arr.1.15.1ff.

108. Polyb.12.18.8; cf. Walbank, *Polybios*,II, p.370; Kromayer- Veith p.138.

109. Ascl.7.2; cf. 7.5ff for how the formation was assembled; Ael.19.1.3; 18.1-3 for assembly; Arr.*T.T.*16.1ff; 17.1 for assembly; cf. Marsden, *Campaign of Gaugamela,* Liverpool, 1964, pp.69-70; Lort-Serignan

p.25.

110. Arr.*Anab.*1.15.7; Ascl.7.2-3, 6-7; Arr.*T.T.*16.1, 6-8; 17.3; Ael.18.1, 4; 19.5; 40.2-4, 6. Cf. Marsden, *op.cit.*, pp.69, 72-3; A.M. Devine,. EMBOΛON- a Study in Tactical Terminology.' *Phoenix*, 27, no.3, 1983, pp.201-217; Lort- Serignan p.25; p.85 where he argues the formation pierces the enemy line. Note most modern authorities accept this formation was standard in the Hellenistic period.

111. Arr.3.14.2; cf. Devine, *op.cit.* for a comprehensive discussion of this problem.

112. Xen.*Hipp.*3.4.13-14 for hand-to-hand; 3.13-14 for feigned flight, this interpretation is not confined to the Classical period, cf. Duffy, *op.cit.*, p.224-5. Xen.*Hell.*3.4.13-14.

113. Xen.*Hipp.*1.21.

114. Kromayer-Veith p.96, Macedonian horse had always been a potent force, cf. Markle, *AJA*, 1977, p.339 for ability to break infantry. That the tactic originated from war with the Triballians cf. Markle, *AJA*, 1978, p.491. Hammond and Griffith *op.cit.* pp.413ff discuss the motives for the introduction of the wedge.

115. Markle, *AJA*, 1977, p.339 (note his contradiction p.340); Lort-Serignan pp. 85, 110; contra Anderson, *AGH*, p.151 n.64.

116. Arr.1.14.1ff.

117. cf. note 112 above.

118. Arr. *T.T.*16.6-8, 9-14.

119. See above at note 109 for how the rhomboid was formed, a wedge was simply half a rhomboid.

120. Ascl.3.1; cf.Ael.10; Arr.*Anab.*7.23.3.

121. Once more refer to note 109 above for an indication of the depth of the wedge, cf. also Marsden, *op.cit.*, pp.68ff.

122. Kromayer-Veith p.116; Tarn, *HMND*, p.64; Marsden, *op.cit.*, 68ff. Based on Arr.3.8ff; cf. 3.13-14 for detail; cf. Bosworth, *op.cit.* pp.288ff; cf. Diod.17.57.1ff; Curt.4.15.12ff.

123. Polyb.12.18.1; cf. Walbank, *Polybios*, II, p.369 who assumes a formation of wedges, refers to Ascl.7..3; Arr.*T.T.*16.6. Kromayer-Veith p.359 for comparison to manipular formation.

124. Polyb.10.23; cf. also Xen.*Hipp.*3.4.13-14 on how this formation might have manoeuvred. The writer believes Polybios used *oulamous* here simply because of the small number of horse in Greek *poleis*league armies, for eastern armies one could substitute *ilai*.

125. Kromayer-Veith p.119 for deployment in general, p.92 for deployment on flanks. For Mantinea cf. Thuc.5.67; Delion, 4.94.

126. Sellasia, cf. Polyb.2.65-66, 67, 69; Plut.*Phil.*6; Kromayer, *AS*, I, pp.22, 237; Pritchett, *Topography*, vol.4, p.68. Magnesia, cf. Livy 37.40.5-6; Just.36.8.6; Bar-Kochva, *SA*, p.170. Tarn, *HMND*, p.33 for cavalry dominance in this period.

127. Gaza, Diod.19.83; cf. Diod.18.30; Plut.*Eum.*4.6-7 for similar tactics in the battle against Craterus.

128. Diod.19.83.

129. Diod.19.82. Note it was intended that the weaker wing wait until the stronger was victorious before it fought.

130. Arr.3.11.8ff; 12.2; Curt.4.13ff.

131. Diod.19.27ff, 29.

132. Tarn, *HMND*, pp.67-8.

133. Ipsus, Plut.*Dem.*29; Diod.21.1.1; Raphia, Polyb.5.84-5; cf. Tarn, *HMND*, p.68.

134. Granicus, Arr.1.14.7; Polyaen.4.3.16; cf. Judeich, *Klio*, 8, pp. 394-5; Raphia, Polyb.5.82; cf. Walbank, *Polybios*, I, p.611; Griffith, *JHS*, 77, 1947, p.77 n.3; cf. Ael.4; Gabiene, Diod.18.28; Gaza, Diod.18.82.

135. Polyb.5.82.8-9; cf. Walbank, *Polybios*, I, p.611; Griffith, *op.cit.*, p.77 n.3; on Ael.31.4; nb. could have been the *ile basilike*, cf. Polyb.5.84.1.

136. Arr.1.14.7; Polyaen.4.3-16; may also have been used in conjunction with infantry, cf. Arr.3.11.8; Diod.17.57.1; Curt.4.13.26, cf. note 116 above for modern opinions that Hellenistic cavalry could break an infantry line.

137. Raphia, Polyb.5.84; Galilli, *op.cit.*, pp.95ff; Gaza, Diod.19. 83.

138. Cf. above note 135.

139. Gabiene, Diod.19.28; Thermopylae, App.*Syr.*20; Livy 36.19.11; Gaza, Diod.19.82.

140. Bar-Kochva, *SA*, p.69; Polyb.5.85.12.; 10.49.7-13; 16.18.7; Livy 37.40.6; App.*Syr.*33; Dion.Hal.20.1.4.

141. Ascalon, Dion.Hal.20.1; P. Garfouldas, *Pyrrhus, King of Epiros,* London, 1979, p.389 n.184; Panion, Polyb.16.18.8; Bar-Kochva, *SA*, pp.146ff, esp. p.151; Axius river, Polyb.10.49.

142. Diod.19.20.

143. Polyb.10.23.1-3; Kromayer-Veith p.132 believed Hellenistic cavalry used standard organisation.

144. Poly,10.23.4ff; cf. Xen.*Hipp.*3.9; Plut.*Phil.*7.3; Xen.Hipp.7.23-5; Hell.7.1.21; Kromayer-Veith p.91,

145. Polyb.12.18.3.

146. See above note 92.

147. Polyb.10.24.7; Loeb translation.

148. Dion.Hal.20.2.1-3.

149. Curt.3.11.13-15.

150. Livy 31.35.

151. Polyb.10.49.

152. Polyb.10.23.8

153. Ascl.1.3.

154. Ael.2.11-13.

155. Arr.*T.T.*4.1-6.

156. Hrd.4.119-120; Xen.*Anab.*3.3.10; E. Darko, "Influeneces touraniennes sur l'evolution de l'art militaire des Grecs, Romains et des Byzantins.", *Byzantion,* 1935, vol.10, pp.443- 469; for the Hellenistic period cf. pp.443; 452-4; Darko discusses Arrian's references pertaining to Alexander employing Oriental horse archers; T. Sulimirski, "Les Archers a Cheval cavaleries legere des anciens." *Revue International D'Histoire Militaires;* 1951/2, 3, pp.447-461; S.V. Kisselev, "Histoire Ancienne de la Siberies du Sud. Materiaux et Recherches.", *Artibus Asiae,* 1951, pp.169-189.

157. Arr.5.13.4.

158. Diod.19.30; cf. 19.27; the Paropanisadae and/or the Arachosians, note the reference to bow-armed elephant escorts.

159. Raphia cf. Polyb.5.79, 82; Magnesia cf. Livy 36.40.80; cf. 35.40.3 for tactics; 36.38.3; for their role cf. Bar-Kochva, *SA,* pp.169ff; Kromayer, *AS,* p.44. Dahae in general cf, Pliny *NH.*6.50. For the "Parthian shot" cf. P. Medinger, 'L'arc turquois et les archers parthes a la bataille de Carrhes.', *Revue Archeologique,* 1933, 2, pp.227-34; M.I. Rostovtzeff, 'The Parthian Shot', *AJA,* 1943, XLVII, pp.174-87.

160. Polyb.4.8.10; cf.4.14; cf. Walbank, *Polybios;* I, p.457; Kromayer-Veith p.138.

161. Livy 33.7.13.

162. Polyb.4.11ff.

163. Polyb.4.64.

164. Livy 33.7.13; Polyb.18.19ff.

165. Livy 31.35.

166. Arr.1.12.7; 1.14.6; 3.7.7; 3.8.1; 3.20.1; cf. Diod.17.17.4 for Thracian *prodromoi.*

167. Livy 31.35.

168. Arr.*T.T.*9.2; 35.6; 36.5; 40.1; 42; cf. R.W. Davies, "Cohortes Equitatae.", *Hist.*, 1971, 20, p752; A.K. Lawson, 'Zu Den Romischen Reiterspielen.', *Archaologisches Korrespondenzblatt*, 10, 1980, pp.173-184.

169. Ael.2.13; Arr.*T.T.*2; 4.5ff.

170. Livy 35.28.8; Griffith, *Mercs.*, pp.248-9; Kromayer-Veith p.139; Martin, *Cav.Ath.*, pp.422-3; Lammert, *RE*, 2, 1.519; P. Wuilleumer, *Tarante*, Paris, 1939, pp.187-8; Griffith, *op.cit.*, p.248 quotes the *Suidas*; cf. Arr.*T.T.*2; Thuc. 5.57.2; Xen. *Hell.* 7.5.23; Diod. 19.29.2 for *hamphippoi.*

171. P. Gardner, *The Types of Greek Coins*, Cabridge, 1883, p.421, pl.V, nos. 8 and 9.

172. Launey I, pp.603-4; Kromayer-Veith p.139.

173. Launey I, pp.602ff; Wuilleumier, *op.cit.*, pp.183ff; Griffith, *op.cit.*, p.247; cf. Polyaen.4.2.1. Kromayer-Veith p.139; Garfouldas, *Pyrrhus*, p.303; cf. Plut. *Pyrr.*13; Strabo 6.280; Diod. 20.104

174. Diod.19.39.2; 42.2; cf. 19.29.

175. Polyb.16.18.2.

176. Livy 37.40.13.

177. Diod.19.82.2.

178. Plut.*Cleom.*6.4; *Philop.*16.4; Polyb.4.73.7; 11.12.6-7; Livy 35.28.8, 29; *IG.*2.ii.958 ll.56 sqq.; 930.33; 961.34; *IG.*ii.3.1218; *IG.*vii.1.2466; *IG.*ix.2.509; cf. Martin, *Cav.Ath.* pp.422, 418-23.

179. Ascl.7.11; Ael.20.2; Arr.*T.T.*18.3.

180. Launey I, pp.603ff and references.

181. Polyaen.3.7.1.

182. Livy 35.29.1.

183. Polyb.11.12.6.

184. Plut.*Phil.*10; cf. Polyb.11.13.

185. B. Rubin, 'Kataphraktenreiterei im Lichte der Ausgrabangen.', *Hist*, 1955, 4, pp.264-283, see p.265 for Hellenistic period. O. Gamber, 'Kataphrakten, Clibanarier, Normannenreiter.' *Jarbuck der Kunsthistorischen sammlung in Wien*, 1968, 64, pp.7-44; P. Jaeckel, 'Pergamische Waffenreleifs.', *Waffen und Kostumekunde*,1965,

pp.87ff; H. H. Russell Robinson, *Oriental Armour,* pp. 12, 17-18, figs. 9-11; M. I. Rostovtzeff, *The Excavations at Dura Europus,* 6th Season, Yale, 1936, pp.439ff; A.D.V. Bivar, 'Cavalry Equipment and Tactics on the Euphrates.', *Dumbarton Oaks Papers,* no.26, 1972, pp.273-291, figs 1-30; *RE,* 2479; Polyb.30.25; 31.39; Walbank, *Polybios,* III, pp.142-3; Livy 37.40, 48; 37.40; Amm.Marc.24.6.8; 25.1.12. For the *parapleurida,* cf.P. Bernard, 'Une peice d'armure Perse sur un monument Lycien.' *Syria,* 1964, 41, pp.195-212; Xen.*Hell.*6.4.1; 7.1.2; *Anab.*1.8.6; *Eq.*12.8.

186. Ascl.1.3; Arr.*T.T.*4.1; Ael.2.11; cf. K. Keichle, *Die taktik des Flavius Arrianus - Beric t. de Rom.-Germ. Komm.*, 1964, pp.24-5, 87ff.

187. Curt.3.11.13ff; cf. Arr.2.9.

188. Arr.3.13.4; cf. Diod.17.53; 59.1ff; Bosworth, *Comm. on Arr.,* p.306; Marsden, *Campaign of Gaugamela,* pp.43; 53ff.

189. Polyb.16.18ff; cf. Bar-Kochva, *SA*, pp.146, 148, 156.

190. Livy 37.40.5-6, 11; 42.2; App.*Syr.*32-4; Justin 36.8.6; Bar- Kochva, *SA*, pp.74-5; 163ff; Kromayer, *AS,* p.44.

191. L. Keppie, *The Making of the Roman Army,* London, 1984, pp. 38-9; Polyb.18.30.

Notes to Chapter 5

1. V.D Hanson, *The Western Way of War - Infantry Battle in Classical Greece*, London, 1989, pp.96ff; 135ff; J. F. Lazenby in *Hoplites - The Classical Battle Experience*, Ed. V. D. Hanson, London, 1991, pp.87ff.

2. Epaminondas *et. al.* cf Lazenby, *Spartan Army*, pp.125ff; 151ff.; for the Nemea, *op.cit.* pp.135ff

3. Xen.*Anab.*8.

4. An 'inner flank' is essentially a flank created by the creation of a large gap in the line of battle. In effect a properly deployed army has only two flanks. Once battle commences, however, and bodies of troops manouevre then holes appear in the army formation. If the hole is large enough an enemy troops can pass through without fear of hinderance then two inner flanks are created. In the case of cavalry this is less important because they are usually moving at speed and usually attempting to break through the enemy line, hence they have the initiative and the enemy finds it difficult to complete any substantial envelopment of their formation. With infantry - such as a *sarisa* phalanx - however, the creation of an 'inner flank' is potentially fatal. This is not to say that armies of the Hellenistic, or indeed any, period should form up shoulder-to-shoulder, in many ways there need to be gaps between units and sub-units to allow for formation changes and movement without disorder - hence Polybios' recommendations for the formation of bodies of horse. It is the case, however, that any gaps be

small enough to be within supporting range of either the troops in the main battleline or a reserve placed to the rear of the army. A general of the statue of Frederick the Great of Prussia warned of the inadvertent creation of 'inner flanks', cf. quoted in Maude, F. L., *Cavalry; Its Past and Future*, London, 1903, p.98, and Nosworthy, B., *The Anatomy of Victory*, New York, 1992, p.178.

5. The ability of Republican Rome to raise vast numbers of legionaries is amply demonstrated by the Second Punic War, where at the height of the conflict she had a quarter of a million men under arms, cf. J. F. Lazenby, *The Hannibalic War*, Warminster, 1978, pp.233-235 and notes..

6. Polyb.30.25.3.

Sources, Bibliography and Abbreviations

Abbreviations for periodical references follow the standard set by the *Cambridge Ancient History;* those used for oft quoted books are noted in the appropriate place below.

1. Abbreviations of Ancient Authors and Their Works Used in This Thesis

Ael. = Aelian, *Tactica.*

Ael. *V.H.* = Aelian, *Varia Historia.*

Amm.Mar. = Ammianus Marcellinus.

Anacreon.

Anaximenes.

App.*Mith.* = Appian, *Mithridates.*

App.*Punica.* = Appian, *Punica.*

App.*Syr.* = Appian, *Syrica.*

Arist.*Birds* = Aristophanes, *Birds.*

Arist.*Ath.Pol.* = Aristotle, *Constitution of the Athenians.*

Arist.*Frag.* = Aristotle, *Fragmenta.*

Arist.*Econ.* = Aristotle, *Oeconomica.*

Arist.*Pol.* = Aristotle, *Politics.*

Arr. = Arrian, *Anabasis.*

Arr.*Ect.* = Arrian, *Order of Battle Against the Alans.*

Arr.*T.T.* = Arrian, *Techne Tactica.*

Ascl. = Asclepiodotus.

Athen. = Athenaeus.

Caes.*B.G.* = Caesar, *The Gallic War.*

Curt. = Quintus Curtius Rufus.

Demost. = Demosthenes, *Olynthiacs.*

Diod. = Diodorus of Sicily.

Dion.Hal. = Dionysios of Halicarnassus.

Euripides, *Rhesus.*

Front.*Strat.* = Frontinus, *Strategemata.*

Harpocration.

Hrd. = Herodotus.

Homer, *Iliad.*

Horace, *Odes.*

Isocr.*Panag.* = Isocrates, *Panegyricus.*

Jos.*Ant.* = Josephus, *Antiquities.*

Jos.*B.G.* = Josephus, *The Jewish War.*

Julius Valerius.

Just. = Justin, *Epitome.*

*Lac. Pol.* = Xenophon, *Respublica Lacedaemoniorum.*

Livy.

Lucian *Dial.Mort.* = Lucian, *Dialogi Mortuorum.*

Lucian, *Zeuxis.*

I Macc. = I Maccabees.

Maurice *Strat.* = Maurice, *Strategicon.*

Nepos *Chabrias* = Cornelius Nepos, *Life of Chabrias.*

Nepos *Eum.* = Cornelius Nepos, *Life of Eumenes.*

Nepos *Iphr.* = Cornelius Nepos, *Life of Iphicrates.*

Paus. = Pausanias.

Philostratus *V.Apol.* = Philostratus, *Vita Apollonii.*

Phlegon.

Phot.*Lex.* = Photius, *Lexicon.*

Plato, *Laches.*

Plato *Leg.* = Plato, *Laws.*

Plato *Rep.* = Plato, *Republic.*

Plato.*Men.* = Plato, *Meno.*

Pliny *NH.* = Pliny, *Natural History.*

Plut.*Aem.Paul.* = Plutarch, *Life of Aemilius Paullus.*

Plut.*Ages.* = Plutarch, *Life of Agesilaus.*

Plut.*Alex.* = Plutarch, *Life of Alexander.*

Plut.*Arat.* = Plutarch, *Life of Aratus.*

Plut.*Artaxerxes* = Plutarch, *Life of Artaxerxes.*

Plut.*Cleom.* = Plutarch, *Life of Cleomenes.*

Plut.*Crassus* = Plutarch, *Life of Crassus.*

Plut.*Dem.* = Plutarch, *Life of Demetrius.*

Plut.*Eum.* = Plutarch, *Life of Eumenes.*

Plut.*Flam.* = Plutarch, *Life of Flaminius.*

Plut.*Luc.* = Plutarch, *Life of Lucullus.*

Plut.*Mor.* = Plutarch, *Moralia.*

Plut.*Pelop.* = Plutarch, *Life of Pelopidas.*

Plut.*Phil.* = Plutarch, *Life of Philopoemen.*

Plut.*Pyrr.* = Plutarch, *Life of Pyrrhus.*

Plut.*Sulla* = Plutarch, *Life of Sulla.*

Pollux, *Onomasticon.*

Polyaen. = Polyaenus.

Polyb. = Polybios.

Propertius.

Sal.*Hist.* = Sallust, *The Histories.*

Strabo.

*Suda, The.*

Tac.*Ann.* = Tacitus, *Annales.*

Tac.*Hist.* = Tacitus, *The Histories.*

Theop.*H.P.* = Theophrastus, *History of Plants.*

Thuc. = Thucydides.

Vegetius *RM.* = Vegetius, *Epitoma rei militaris.*

Vergil *Aen.* = Vergil, *Aeneid.*

Xen.*Ages.* = Xenophon, *Agesilaus.*

Xen.*Anab.* = Xenophon, *Anabasis.*

Xen.*Cyr.* = Xenophon, *Cyropaedia.*

Xen.*Eq.* = Xenophon, *De Equitandi ratione.*

Xen.*Hell.* = Xenophon, *Hellenica.*

Xen.*Hipp.* = Xenophon, *Hipparchicus.*

Xen.*Mem.* = Xenophon, *Memorabilia.*

2. Modern Works

Abrahams, J. *Campaigns in Palestine from Alexander the Great,* London, 1927.

Adcock, F.E. *The Greek and Macedonian Art of War.* Berkeley 1957.

Adriani, A. "Sculpture del museo Greco-Romano di Alessandria", *Bulletin de la société royale d'Archéologie D'Alexandrie,* 32, 1938,pp.77ff.

*Altertümer von Pergamon,* Museen zu Berlin and Deutsches Archaeolo-

gisches Institut, Berlin, 1885- (*A VP*).

Anderson, J.K., *Ancient Greek Horsemenship*, Los Angeles, 1961 (Anderson, *AGH*).

- "The statue of Chabrias", *American Journal of Archaeology*, 67, 1963, pp.411-3.

- "Sickle and *xyle*", *Journal of Hellenic Studies*, 94, 1964, pp.166ff.

- *Military Theory and Practice in the Age of Xenophon*. California, 1970 (Anderson, *MTPAX*).

- "Greek Chariot-borne and Mounted Infantry", *American Journal of Archaeology*, 79, 1975, pp. 175-87

Andrewes, A. *The Greek Tyrants*, London, 1956.

- *Greek Society*, Oxford, 1967.

Andronicus, M. "Deux steles funeraires grecques de Vergina", *Bulletin de correspondance hellenique*, 79, 1955, pp.87-101.

- "Sarissa", *Bulletin de correspondance hellenique*, 94, 1970, pp.1ff.

- *Vergina: the Royal Tomb*, Athens, 1984.

Anson, E. M. "The Hypaspists: Macedonia's professional citizen soldiers", *Historia*, 34, 1985, pp.246ff.

- "The evolution of the Macedonian army assembly (330- 315B.C.)", *Historia*, 50, 1991, pp.230ff.

Arci, F. "Il Peloponneso al tempo della guerra sociale (220-17 A.C.)",

*Studi de Storia ant.*, 2, 1893, pp.141-55.

Armandi, P. *Histoire militaire des éléphants depuis les temps le plus recules jusqu'a l'introduction des armes a feu*, Paris, 1943.

Ashton, N.G. "The Lamian War - a false start?" *Antichthon*, 17, 1983, pp.47ff.

Atkinson, K.M.T. "A Hellenistic Land-Conveyance: The Estate of Mnesimachus in the Plain of Sardis", *Historia*, 21, 1972, pp.45-7.

Avishar, S. *Judas Maccabaeus' Campaigns*, Tel Aviv, 1957.

Aymard, A. "Philippe de Macedon ôtage à Thebes", *Revue des études anciennes*, 56, 1954, pp.15-36.

- "Du nouveau sur la chronologie des Seleucides", *Revue des études anciennes*, 57, 1955, pp.102-12.

Badien, E. "Orientals in Alexander's Army", *Journal of Hellenic Studies*, 85, 1965, pp.160ff.

- "The battle of the Granicus: a new look", *Ancient Macedonia*, 2. Institute for Balkan Studies, Thessalonike, 1977, pp.211-33.

Balfor, H. "On the Structure and Affinities of the CompositeBow",*Journal of the Royal Anthropological Institute*, 19, 1890, pp.220-50.

- "On a Remarkable Ancient Bow and Arrows", *Journal of the Royal Anthropological Institute*, 26, 1897, pp.210-20.

- "The Archer's Bow in the Homeric Poems", *Journal of the Royal*

*Anthropological Institute*, 51, 1921, pp.289-309.

Baradez, J. "Les nouvelles fouilles de Tipasa et les operations d'Antonin le Pieux en Mauretanie", *Libya*, 2, 1954, pp.84ff

- *Tipasa: ville antique de Mauretanie*, Algiers, 1982.

Bar-Kochva, B. "On the Sources and Chronology of Antiochus I's Battle against the Galatians", *Proceedings of the Cambridge Philological Society*, 119, N.S. 19, 1973 pp.1-8.

- "Menas' inscription and Corupedion", *Scripta Classica Israelica*, 1, 1974, pp.14-23.

- "Hellenistic Warfare in Jonathan's Campaign near Azotos", *Scripta Classica Israelica*, 2, 1975, pp.83-96.

- *The Seleucid Army*. Cambridge, 1976 (Bar-Kochva, *SA*).

Bauer, A. *Die Griechen AltertÜmer, III, Die KriegsaltertÜmer*, Munich, 1893 (Ad. Bauer, *Griech. Kriegsalter).*

Beaudouin, M. "L'influence Macedonienne dans les Cyclades au IIIe. siecle avant J-C", *Revue de philologie*, 1902, pp.301ff.

Beazley, J.D. *Attic Black-figure Vase-painters*, Oxford, 1956 (*ABV).*

- *Developments in Attic Black Figure Ware*, Sather Classical Lectures, Berkeley, 1951.

Becher, W. *RE*, s.v. "Palaiste", XVIII, 2.2471.

Becker, J. *Grabschrift eines Panzereiteroffiziers*, Braushung, Frankfurt-

am-Maine, 1868.

Bellinger, A.R. "The End of the Seleucids", *Transactions of the Connecticut Academy of Arts and Sciences*, 38, 1949, pp.51- 102.

Beloch, J. "Griechische Augebot II; 3. Boeotian", *Klio*, 6, 1906, pp.34-51

- *Griechische Geschichte*. IV.1 and 2. Berlin-Leipzig, 1922-7.

- *die Bevölkerung der griechisch-römischen Welt*, Jena, 1896 (Beloch, *BevÖlkerung*).

Bengtson, H. *Die Strategies in der Hellenistischen Zeit*, Munich, 1964.

Béquigon, Y. "La champ de bataille de Pharsale", *Bulletin de correspondance hellenique*, LII, 1928, pp.22-28.

- "La retraite de Philip V en 198 et l'invasion etolienne en Thessalie", *Bulletin de correspondance hellenique*, LII, 1928, pp.444-65.

Bernard, P. "Une piece d'armure Perse sur un monument Lycien", *Syria*, 41, 1964, pp.195-212.

Berve, H. *Das Alexanderreich auf prosopographischer Grundlage*. Munich, 1926 (Berve).

Best, J.G.P., *Thracian Peltasts and their influence on Greek Warfare*, Groningen, 1969 (Best).

Bevan, E.R., *A History of Egypt under the Ptolemaic Dynasty*, London, 1927.

- *The House of Seleucus*, 2 Vols., London, 1902.

Bickerman, E. *Institutions des Seleucides*, Paris, 1938 (Bickerman, *Instits*).

Bieber, M. *Sculpture of the Hellenistic Age*, New York, 1955.

Bivar, A.D.H. "Cavalry Equipment and Tactics on the Euphrates", *Dumbarton Oaks Papers*, 26, 1072, pp.273-91.

Blyth, P. *The Effectiveness of Greek Armour Against Arrows in the Persian War*, unpublished PhD. Thesis, Reading, 1978.

Boardman, J. *Athenian Red Figure Vases: The Archaic Period*, London, 1975.

Bosworth, A.B. "Philip II and Upper Macedonia", *Classical Quarterly*, 21, 1971, pp.93-105.

- "ΑΣθΕΤΑΙΡΟΙ", *Classical Quarterly*, 23, 1973, pp.245ff.

- "Arrian and the Alani", *Harvard Studies in Classical Philology*, 81, 1977, pp.217-255.

- *A Historical Commentary on Arrian's History of Alexander*, Vol. I, Books I-II, 1980 (Bosworth, *Comm. on Arr*).

- "Alexander and the Iranians", *Journal of Hellenic Studies*, 100, 1980, pp.1ff.

- "Alexander and the decline of Macedon", *Journal of Hellenic Studies*, 106, 1986, pp.1ff.

Bouché-Leclerq, A. *Histoire des Seleucides*, Paris, 1914 (Bouché- Leclerq).

Braun, "Zur Schlacht bei Chairones", *Jahreshefte des Oesterreichischen*

*Archaologischen Istituts,* Wien, 37, 1948, pp.88ff.

Breccia, E. *La Necropole di Sciatby,* Cat. Gen. Mus. d'Alexandrie, 1912.

Briant, P. *Antigone le Borgne,* Paris 1973.

- "D'Alexandre le Grand aux diadoques: le cas d'Eumene de Kardia", *Revue des études anciennes,* 75, 1973, pp.43ff.

Briscoe, J. *A Commentary on Livy, Books 31-33,* Oxford, 1973.

Brown, T.S. "Hieronymus of Cardia", *American Historical Review,* 53, 1947, pp.684-96.

- "Apollophanes and Polybios Book V", *Phoenix,* 15, 1961, 187- 95.

Brunt, P.A., "Persian Accounts of Alexander's Campaign", *Classical Quarterly,* 12, 1962, pp.141-155.

- "Alexander's Macedonian Cavalry", *Journal of Hellenic Studies,* 83, 1963, p.27ff.

- *Italian Manpower,* Oxford, 1971.

Buchner, M. "Das Bogenschiessen der Aegineten", *Zeitschrift fur Ethnologie,* 40, 1908, 845-856.

Buckler, J. "Plutarch on Leuktra", *Symbolae Osloenses,* 55, 1980, pp.76-93.

- *Philip II and the Sacred War, Supplements to Mnemosyne,* Leiden, 1989.

Buckler, W.H. & Robinson, D.M. "Greek inscriptions from Sardis", *American Journal of Archaeology,* 16, 1912, pp.11-82.

Burn, A.R. "Notes on Alexander's Campaigns, 332-330", *Journal of Hellenic Studies*, 72, 1952, pp.72ff.

- "The Generalship of Alexander", *Greece and Rome*, 12, 1965, pp.140.

Burr, D. *Terracottas from Myrine*, Vienna, 1934

Bury, J. B. & Meiggs, R. *A History of Greece*, London, 1975.

Bushell, S.W. *Chinese Art*, 2nd Ed., 1910, vol.1.

Callaghan, P.J. "Macedonian Shields, 'Shield-Bowls' and Corinth: A Fixed Point in Hellenistic Ceramic Chronology?" *Athens Annals of Archaeology*, 11, 1979, pp54-60.

- "The Trefoil Style and Second Century Hadra Vases", *Annual of the British School of Archaeology at Athens*, 75, 1980, pp.35-47.

- "On the Date of the Great Altar of Zeus at Pergamon", *Bulletin of the Institute of Classical Studies*, 28, 1981, pp.115-121.

*The Cambridge Ancient History, Volume VI, Macedon 401-310 B.C.* Cambridge, 1927 (*CAH. VI*).

*The Cambridge Ancient History, Plates to Volume VII*, Cambridge, 1984.

*The Cambridge Ancient History, Volume VII.1, The Hellenistic World.* New ed., Cambridge, 1989 (*CAH. VII*).

*The Cambridge Ancient History, Volume VIII, Rome and the Mediterranean.* 2nd Ed., Cambridge, 1989 (*CAH. VIII*).

Cartledge, P. & Spawforth, A. *Hellenistic and Roman Sparta*, London, 1989.

Cary, M. *A History of the Greek World, 323 to 146 B.C.*, London, revised ed., 1951.

Casson, L. *The Ancient Mariners*, London, 1960.

Cavaignac, E.M. "La population du Peloponnese aux 5eme et 4eme siècles" *Klio*, 12, 1912, pp.261ff.

- (Review) Launey, *Recherches sur les armées hellenistiques. Rev. de Phil.* 25 (1951) pp.292-4.

Cawkwell, G. "The Defense of Olynthus", *Classical Quarterly*, 12, 1962, pp.122-140.

- *Philip of Macedon*, London, 1970.

Cerrenko, *The Skythians 700-300 B.C.*, London, 1983.

Chapot, V. "Fosses et tranchées", *Revue des études grecques*, 28, 1915, pp.103ff.

Charbonneaux, M.V. *Hellenistic Art*, London, 1973 (Charbonneaux, *Hell. Art*).

Chrimes, K.M.T. *Ancient Sparta*, Leicester, 1948.

Cohen, G.M. "The Seleucid Colonies", *Historia Einzelschriften*, 30, 1978.

Conder, C.R. *Judas Maccabaeus and the Jewish War of Independence*, London, 1894.

Connie, J.M. *Epaminondas and Philip II: a comparative study in military*

*reorganisation*, PhD. thesis, University of Kentucky, 1980.

Connolly, P. *The Greek Armies*, London, 1977.

- *Hannibal and the Enemies of Rome*, London, 1977.

- *Greece and Rome at War*, London, 1981 (Connolly, *GRAW*).

Coulston, J.C. "Roman, Parthian and Sassanid tactical developments.", *The Defence of the Roman and Byzantine East: British Archaeological Reports*, 297, 1986., pp.64ff.

Coussin, P. *Les armes romaines*, Paris, 1926.

- "Les Armes Gaulois", *Revue Archeologique*, 5th Ser., 25, 1927, pp.142-176, pp.301-325.

- "Les Armes Gaulois", *Revue Archeologique*, 5th Ser., 26, 1927, pp.43-79.

- *Les institutions militaires et navales*, Paris, 1932 (Coussin, *Instits*).

Crawford, D.J. *Kerkeosiris, an Egyptian Village in the Ptolemaic Period*, Cambridge, 1971 (Crawford, *Kerkeosiris*).

Cumont, F. *Fouilles de Doura-Europos*, Paris, 1926.

- "Nouvelles Inscriptions Grecques de Susa", *Comptes Rendus de l'Academie des Inscriptions et Belles-lettres*, 1931, pp. 233-50, 278-92; 1932, pp.271-86.

Dain, A. *Histoire du Texte d'Elien le Tactician*, Paris, 1946.

Dancy, J.C. *A Commentary on I Maccabees*, Oxford, 1954.

Darembert, *Saglio Lafage Diction. des Ant.*, sv. "Frontale".

Darko, E. "Influences touraniennes sur l'evolution de l'art militaire des Grecs, des Romains et des Byzantines", *Byzantion*, 10, 1935, pp.443ff.

Daubies, M. "Cleomene III, les hilotes et Sellasie", *Historia*, 20, 1971, pp.665ff.

Davesne, A. *La Frise du temple d'Artemis a Magnesie du Meandre, catalogue des fragments du musée du Louvre*, Paris, 1982.

Davies, E.W. "Cohortes Equitatae", *Historia*, 20, 1971, pp.751-63.

- "The Persian battle plan at the Granicus", *Laudatores Temporis Acti*, (James Sprunt Studies in Historical and Political Science), XCVI (ChapelHill), 1984, pp.34-44.

Davies, R.W. "Frontinus, Hadrian and the Roman Army", *Latomus*, 27, 1968, pp.88-91.

Debvoise, N.C. *A Political History of Parthia*, Chicago, 1938.

Delbruck, H. *Geschichte der Kriegkunst*, Vol. 1, Berlin, 1920 (Delbruck).

- *Warfare in Antiquity*, English Edition, Vol. 1, 1975. London, 1975.

- "Antike kavallerie", *Klio*, 10, 1910, pp.335-40.

De Sanctis, G. "Sellasia", 55, *Rivista storica dell' Antichità* 1927, pp.489-91.

- "Il regolamento militare dei Macedoni", *Rivista storica dell' Antichità*, 62, 1934, pp.515ff.

Develin, R. "Anaximenes (Fr.Gr.Hist.) F4." *Historia*, 34, 1985, pp.493ff.

Devine, A.M. "Grand tactics at Gaugamela." *Phoenix*, 29, 1975, pp.375-85.

- "EMBOΛON: A Study in Tactical Terminology", *Phoenix*, 37, 1983, pp.201-217.

- "Diodorus' Account of the Battle of Gaza", *Acta Classica*, 27, 1984, pp.31-40.

- "Demythologizing the Battle of the Granicus", *Phoenix*, 40, 1986, pp.265-278.

- "The Strategies of Alexander the Great and Darius III in the Issus Campaign (333 B.C.)", *Ancient World*, 12, 1985, pp.25-38.

- "Grand Tactics at the Battle of Issus", *Ancient World*, 12, pp.39-59, 1985.

- "Diodorus' Account of the Battle of Paritacene" *Ancient World*, 12, 1985, pp.75-86.

- "Diodorus' Account of the Battle of Gabiene", *Ancient World*, 12, 1985, pp.87-96.

- "The Battle of Gaugamela: A Tactical and Source-Critical Study", *Ancient World*, 13, 1986, pp.87-116.

- "The Battle of the Hydaspes: A Tactical and Source-Critical Study", *Ancient World*, 16, 1987, pp.91-113.

Dittenberger, W. *Orientis Graeci Inscriptiones Selectae*, Leipzig, 1903-5

(*OGIS*).

- *Sylloge inscriptionum Graecarum*, Leipzig, 1915-24 (*Sylloge*).

Domaszewski, A. von, *Die Phalangen Alexanders und Caesars Legionen*, 1926, (Domaszewski).

Droysen, H. "Agema", *RE*, I. Col. 771.

- "Alexanders des Grossen Armee", *Hermes Zeitschrift*, 12, 1877, pp.226-252.

- *Untersuchungen Über Alexander des Grosse*, Freiburg, 1885 (Droysen, *Unters*).

- *Heerwesen und KriegfÜhrung der Griechen*, Freiburg, 1888 (Droysen, *Heer*).

- *Geschichte Alexanders des Grossen*, Berlin, 1917.

Duffy, C. *The Army of Frederick the Great*, London, 1974.

- *The Military Experience in the Age of Reason*, London, 1987.

Eadie, J.W. "The development of Roman mailed cavalry." *Journal of Roman Studies*, 57, 1967, pp.161-73.

Ebeling, E. "Die Rustung eines babylonischen Panzerreiters nach einem Vertrage aus der Zeit Darius II", *Zeitschrift Assyriologie*, 1952, pp.203-213.

Edson, C. "Imperium Macedonicum:- the Seleucid Empire and the Literary Evidence", *Classical Philology*, 53, 1958, pp.153- 70.

Ellis, J.R. *Philip II and Macedonian Imperialism*, London, 1976.

- "Philip's Thracian Campaign of 352-351", *Classical Philology*, 72, 1977, pp.32-39.

- "Population transplants by Philip II", *Macedonia*, 9, pp.9- 17.

Engels, D.W. *Alexander the Great and the Logistics of the Macedonian Army*, Berkeley and Los Angeles, 1978.

Errington, R.M. *Philopoemen*, Oxford, 1969.

- "From Babylon to Triparadeisos 323-320 B.C." , *Journal of Hellenic Studies*, 90, 1970, pp.47-77.

- "On the Alleged Syro-Macedonian Pact and the Origins of the Second Macedonian War", *Athenaeum*, 49, 1971, pp.336-54.

- "The Nature of the Macedonian State Under the Monarchy", *Chiron*, Band 8, 1978.

Erskine, A. "The πεζέταιροι of Philip II and Alexander III" *Historia*, 49, 1989, pp.385ff.

Ferguson, W.S. *Hellenistic Athens*, New York, 1911.

Ferrabino, A. "La battaglio di Sellasia.", *Atti dell' Accademia - delle Scienze di Torino*, 54, 1918/19, pp.75ff.

Ferrill, A. *The Origins of War; From the Stone Age to Alexander the Great*, London, 1986.

Feyel, M. "Un nouveau fragment de réglement militaire trouvé à

Amphipolis.'', *Revue Archéologique*, 1935, p.9.

- *Polybe et l'histoire de la Beotie au IIIeme siècle*, Paris, 1942 (Feyel, *Polyb.*).

Foley, V. & Soedel, W. "Ancient catapults", *Scientific American*, 240, n.3, (March 1979), pp.150-60.

Forrest, W.G. *The Emergence of Greek Democracy*, London, 1966

- *A History of Sparta*, London, 1968.

Foster, R. "Studien zu den Griechischen Taktikern", *Hermes Zeitschrift*, 12, 1877, pp.426ff.

Foucart, M.P. "Exploration de la plaine de l'Hermus per M. Fontier", *Bulletin de correspondance hellenique*, 9, 1885, pp.387-403.

Frazer, P.M "Inscriptions from Graeco-Roman Egypt", *Berytus*, 15, 1964, pp.71-93, pls.X-XVI.

Frazer P.M & Ronne, W. *Boeotian Tombstones*, London, 1952.

Friis Johanson, K. "Eine Attische trinkschale", *Acta Archaeologica*, 31, 1960, 129ff.

Fuks, A. "The Spartan citizen body in the mid third century and its enlargement proposed by Agis III.", *Athenaeum*, 40, 1902, pp.246ff.

Fuller, J.F.C. *The Generalship of Alexander the Great*, New Brunswick, 1960 (Fuller, *Generalship*).

Furmann, H. *Philoxenos von Eretria*, Kaestner, 1931.

Furtwängler, A. *Olympia: die Ergebnisse der von dem Deutschen Reich veranstalteten Ausgrabung; Vol. IV Die Bronzen.* Berlin, 1887-97 (Furtwängler, *Olympia IV*).

Gabba, E. *Republican Rome, the Army and the Allies*, English Ed., Oxford, 1976. 1976.

Galili, E. "The Seleucid invasion of Palestine", *Ma'arachot*, 22, 1954, pp.35-73.

- "The enemies of the Hasmonaeans", *Ma'arachot*, 52, 1968, pp.50-8.

- "Raphia, 217 B.C.E., revisited.", *Scripta Classica Israelica*, 3, 1976, p.52.

Gamber, O. "Dakische und Sarmatische Waffen auf den Reliefs der Traianssaule", *Jahrbuch des kunsthistorischen Sammlung in Wien*, 60, 1964, pp.7-34.

- "Kataphrakten, Clibanarier, Normannreiter", *Jahrbuch des kunsthistorischen Sammlung in Wien*, 68, 1968, pp.17-44.

Gardiner, E.N. "Throwing the Javelin", *Journal of Hellenic Studies*, 27, 1907, pp.249-273, pls. XVII-XX.

Gardner, P. *The Types of Greek Coins*, Cambridge, 1883.

Garoufalias, P. *Pyrrhus, King of Epiros*, English Ed., London, 1979 (Garoufalias, *Pyrrhus*).

Garlan, Y, *La Guerre dans l'Antiquité*, Paris 1972.

Geisau, V. *RE*, "Kapy(i)a(i)", col.1896-7.

Gerassimov, T. & Vendedikov, I. *Thracian Art Treasures*, Sofia, 1975.

Geyer, F. *Makedonien bis zur Thronbesteigung Philipps II, H.Z. Beiheft* 19, 1930 (Geyer, *Maked. b.z. Phil*).

Ghirshmann, R. *Begram, recherches archeologiques et historiques sur les Kouchans*, Cairo, 1946.

- *Iran; from the Earliest Times to the Islamic Conquest*, London, 1954.

- *Iran; Parthians and Sassanians*, London 1962.

Glotz, G. & Cohen, R. *Histoire Grecque*, Vol. III, Paris, 1936.

Glover, R.F. "The Tactical Handling of the Elephants", *Greece and Rome*, 17, 1948, pp.1-11.

Golan, D. "Autumn 200 B.C.: events at Abydus", *Athenaeum*, 63, 1985, pp.389ff.

Gordon-Childe, V. "The significance of the sling for Greek prehistory.", *Studies Presented to David M. Robinson*, St. Louis, 1951, pp.1-5.

Gomme, A.W. Andrewes, A. & Dover K.J. *A Historical Commentary on Thucydides*, Oxford, 1945-70 (Gomme, *HCT*).

Goukowsky, P. "Le roi Poros, son elephant et quelques outres", *Bulletin de correspondance hellenique*, 1972, pp.474-502.

Gowers, W. "The African Elephant in Warfare", *African Affairs*, 46, 1947, pp.42-9.

von Graeve, V. *Der Alexandersarkophag und seine Werkstatt*, Berlin, 1970.

Graindor, P. *Terre cuites de l'Egypte greco-romaine*, Anvers, 1939.

Granier, F. *Die Makedonische Heeresversammlung*, Munich, 1931.

Green, P. *Alexander of Macedon*, London, 1970.

Greenhalgh, P.A.L. *Early Greek Warfare*, Cambridge, 1973.

Griffith, G.T. *Mercenaries of the Hellenistic World*, Cambridge, 1935 (Griffith, *Mercs*).

- "Macedonika: notes on the Macedonians of Philip and Alexander.", *Proceedings of the Cambridge Philological Society*, NS.4, 1956, p.3.

- "A note on the hipparchies of Alexander", *Journal of Hellenic Studies*, 83, 1963, p.69.

- "The Macedonian Background", *Greece and Rome*, n.s. 12, 1965, pp.128.

- "Peltasts and the origins of the Macedonian Phalanx", *Ancient Macedonian Studies in Honour of E.F. Edson*, 1981 (Griffith 1981).

Grote, G. *Der Griechische Soldner der hellenistichen Zeit*, Jena, 1913.

Grundy, G. B. *Thucydides and the History of his Age*, Oxford, 1948.

Hackett, J. (ed.) *Warfare in the Ancient World*, London, 1989.

Hageman, A. *Griechische Panzerung*, Leipzig, 1919 (Hageman, *Panzerung*).

Haldon, J.F. "Some aspects of Byzantine military technology.", *Byzantine and Modern Greek Studies*, 1935, pp.11-47.

Hamilton, J.R. "Three passages in Arian", *Classical Quarterly*, 1955, pp.217-221.

- "The cavalry battle at the Hydaspes", *Journal of Hellenic Studies*, 76, 1956, pp.26ff.

Hammond, N.G.L. "Diodorus' Narrative of the Sacred War and the Chronological Problems of 357-352 B.C.", *Journal of Hellenic Studies*, 57, 1937, pp.44ff.

- "The two battles of Chaeronea (338 B.C. and 86 B.C.)", *Klio*, 31, 1938, pp.186-218.

- *A History of Greece*, Oxford, 1959.

- "The opening campaigns and the battle of the Aoi Stena in the 2nd Macedonian War", *Journal of Hellenic Studies*, 46, 1966, pp.39-54.

- "The campaign and battle of Marathon", *Journal of Hellenic Studies*, 88, 1968, pp.13ff.

- *Problems in Greek History*, Oxford, 1973

- "Alexander's Campaign in Illyria", *Journal of Hellenic Studies*, 94, 1974, pp.66ff.

- "A cavalry unit in the army of Antigonus Monophthalmus: Asthippoi", *Classical Quarterly*, n.s. 28, 1978, pp.128-135.

- & Griffith, G.T. *A History of Macedonia*, Vol. 2, Oxford, 1979 (Hammond & Griffith, *Mace.II*).

- "The battle of the Granicus river", *Journal of Hellenic Studies*, 100, 1980, p.73ff.

- "Training in the use of a sarissa and its effects in battle 359-333 B.C.", *Antichthon*, 14, 1980, pp.53-66

- *Alexander the Great: King, Commander and Statesman*, London, 1981 (Hammond, *AG:KSG*).

- "The battle of Pydna." *Journal of Hellenic Studies*, 104, 1984, pp.31-47.

- "Some Macedonian offices c.336-309." *Journal of Hellenic Studies*, 105, 1985, pp.156-60.

- "The campaign and battle of Cynoscephalae", *Journal of Hellenic Studies*, 108, 1988, pp.60ff.

Hampl, F. *Der König der Makedonien*, Diss. Leipzig, 1934.

- "Perioikoi armed as Macedonians", *Hermes*, 1937, pp.1ff.

Hanson, E.V. *The Attalids of Pergamon*, 2nd Ed., Ithaca, 1971.

Hanson, V.D. *Warfare and Agriculture in Classical Greece*, Pisa, 1983. - *The Western Way of War: Infantry Battle in Classical Greece*, London, 1989.

(Ed.) - *Hoplites : the Classical Greek Battle Experience*, London, 1991.

Harris, H.A. "Greek Javelin Throwing", *Greece and Rome*, 10, 2nd Ser., 1963, pp.26-38.

- *Greek Athletes and Athletics*,

Hatzopoulos, M.B. & Loukopoulos, L.D. (eds.), *Philip of Macedon*, Athens, 1980.

Hatzfeld, J. *Alcibiade, Etude sur l'Histoire d'Athenes à la fin de Ve siècle*, Paris, 1951.

Hauben, H. "Antigonos' invasion plan for his attack on Egypt in 306 B.C.", *Orientalia Lovaniensia Periodica*, 6/7, 1975/6 = *Miscellanea in honour of J. Vergote*, pp.267ff.

- "Rhodes, Alexander and the Diadochi from 333/2 to 304 B.C.", *Historia*, 26, 1977, pp.307ff.

Head, B.V. (Ed.), *British Museum Catalogue of Greek Coins, no. V Macedonia*, London, 1879 (Head, *BMCC:Mace*).

Head, D. *Armies of the Macedonian and Punic Wars 359 B.C. to 146 B.C.*, Sussex, 1983.

Heckel, W. "The career of Antigenes." *Symbolae Osloenses*, vol. 57, 1982, pp.57-67.

Heuzey, L. "Trois monuments attribuès à la Grece du Nord", *Bulletin de correspondance hellenique*, 8, 1884, 331-345.

Hill, D.J.F. "Grecian and Other Bow-shots", *Journal of Archer- Anti-quaries*,

Hogarth, D.G. *Philip and Alexander of Macedon*, 1897

- "The army of Alexander", *Journal of Philology*, 17, pp.1ff.

Holladay, A.J. "Hoplites and Heresies", *Journal of Hellenic Studies*, 102, 1982, pp.94-7.

Holleaux, M. "La premier expedition d'Antiochus le Grand en Koile Syria", *Mélanges Nicole*, Geneva, 1905, pp.273-9.

- "Dedicace d'un monument commemoratif de la bataille de Sellasia", *Bulletin de correspondance hellenique*, 31, 1907, pp.96-114.

- "La chronologies de la cinquième guerre de Syries", *Klio*, 8, 1908, 267-81.

- "L'expedition de Philippe V en Asie Mineure, la bataille de Chios (201 av. J-C.)", *Klio*, 9, 1909, pp.450-60.

- "L'Année de la bataille de Cynoscephalai", *Revue des études anciennes*, 17, 1915, pp.165-72.

- "Les Aitoliens auxiliairies d'Achaias (Polyb.7.16.7)", *Revue des études anciennes*, 18, 1916, pp237-47.

- "Sur la Guerre Cretois", *Revue des études grecques*, 30, 1917, pp.88-104.

- "L'expedition de Dikaiarchus dans les Cyclades et sur l'Hellespont", *Revue des études grecques*, 33, 1920, pp.223ff.

- "L'expedition de Philip V en Asie en 201 av.J-C.", *Revue des études anciennes*, 23, 1921, pp.181-212, 237-58; 25, 1923, pp.336-66.

- "Sur un passage de Phlegon de Tralles", *Revue de philologie*, 1930, pp.305ff.

Humble, R. *Warfare in the Ancient World*, London, 1980.

Ippel, A. Review of H. Furmann, *Philoxenos of Eretria*, *Gnomon*, 10, 1934, pp.134ff.

Jacobsthal, P. *Early Celtic Art*, Oxford, 1944.

Jacoby, F. *Fragmente der Griechischen Historiker*, 1926.

Jaeckel, P. "Pergamische Waffenreliefs", *Waffen und kostumekunde siebenter Band Jahrgang*, 2, 1965, pp.94-122.

James, C. M. *Epaminondas and Philip II: A Comparative Study in Military Organisation*, PhD. thesis, University of Kentucky, 1980.

Jeffery, L.H. *Archaic Greece*, Cambridge, 1976.

Jones, A.M.H. *The Greek City from Alexander to Justinian*, Oxford, 1940 (Jones, *Greek City*).

Judeich, W. "Die Schlacht am Granikos", *Klio*, 8, 1908, pp.372ff.

Kahler, H. *Die Fries von Reiterdenkanal des Aemilius Paullus Monument im Delphi*, Berlin, 1965.

Kahrstedt, U. "Städte in Makedonien.", *Hermes*, 81, 1953, pp.85- 111ff.

Kalleris, J.N. *Les Anciens Macedoniens*, Athens, 1954.

Keegan, J. *The Face of Battle*, New York, 1976

- & Holmes, R. *Soldiers: a history of men in battle*, London, 1985

- *The Mask of Command*, New York, 1987.

Keichle, K. *Die Taktik des Flavius Arrianus, Bericht. de Rom.- Germ. Komm.*, 1964.

Keil, B. "KOPOY ΠΕΔΟΝ", *Revue de philologie*, 1902. pp.257ff.

Keppie, L. *The Making of the Roman Army*, London, 1984.

Kincaid, C.A. *The Successors of Alexander the Great*, Chicago, 1969.

Kisselev, S.V. "Histoire ancienne de la Siberie du Sud" *Artibus Asiae*, 1951, pp.169-189.

Klopsteg, P.E. "Physics of Bows and Arrows", *American Journal of Physics*, vol. 2, no. 4, 1943, pp.175-191.

- *Turkish Archery and the Composite Bow*, Evanston, Illinois, 1947.

Köchley, H.A.T. & Rustow, W. *Geschichte des Griechische Kriegswesen*, Arau. 1852 (Rustow-Köchly).

- & Rustow, W. *Griechische Kriegschriftsteller*, Arau, 1855.

Korfman, M. "The Sling as a Weapon", *Scientific American*, vol. 229, no.4, pp.34-42.

Krause, A. "Beiträge zur Alexander-geschichte", *Hermes*, 25, 1890, pp.62ff.

Kressig, K. *Wirtschaft und Gesellschaft im Seleukidenreich*, Berlin, 1978.

Kroll, J.H. "Some Athenian armor tokens.", *Hesperia*, 46, 1977, pp.141ff.

- & Mitchel, F.W. "Clay tokens stamped with the names of Athenian military commanders.", *Hesperia*, 49, 1980, pp.86ff.

Kromayer, J. - "Sellasia", *Bulletin de correspondance hellenique*, 34, 1910, pp.508-37.

- *Schlacten-atlas zur antike kriegsgeschichte mit berlietendemte*, Leipzig 1923-8.

- & Veith, G. *Heerwesen und Kriegfuhrung der Griechen und Romer*, Munich, 1928 (Kromayer-Veith).

- *Antike Schlachtfelder in Griechenland*, Berlin, 1903-31 (Kromayer, *AS*).

- & Kahnes, E. *Drei Schlachten aus dem griechisch-römischen Altertum*, Leipzig, 1921.

- "Vergleichende studien zur Geschichte des Griechischen und Romischen Heerwesens." *Hermes Zeitschrift*, 35.

Lammert, F. *RE*, s.v. "Peltastoi", 19.405, 58-60.

- RE, s.v. "Sarisse, 2.1A, 215ff.

- *RE*, s.v. "*ἵππεῖς*", col. 1693.

Lane Fox, R. *Alexander the Great*, London, 1973.

Launey, M. *Recherches sur les armées hellénistiques*, 2 Vols., Paris, 1949-50 (Launey).

Lawson, A.K. "Zu den römischen Reiterspielen.", *Archaologisches Korres-pondenzblatt*, 10, 1980, pp.173ff.

Lazenby, J.F. *Hannibal's War*, Warminster, 1978.

- *The Spartan Army*, Warminster, 1985 (Lazenby, *Spartan Army*).

Leake, W.M. *Travels in the Morea*, 3 Vols., London, 1830 (Leake, *Morea*).

Lehmann, K. "Die Schlacht am Granikos", *Klio*, 11, 1911, pp.232ff.

Lesquier, J. "ΛΑΑΡΧΗΣ", *Revue de philologie*, 1907, p.297.

- "Note sur une inscription d'Ashmouien", *Revue de philologie*, 32, 1908. pp.214-225

- *Les institutions militaires de l'Egypte sous les Largides*, Paris 1911 (Lesquier).

Lévêque, P. *Pyrrhos*, Paris, 1957.

Liddell H.G & Scott, A, *A Greek-English Lexicon*, Oxford, 1944 (Liddell and Scott).

Linderski, J. "Roman officers in the year of Pydna", *American Journal of Philology*, 111, 1990, pp.53ff.

Lindholm, K.G., *The Sling as a Weapon: Additional notes to a previous paper*, Stockholm, 1940.

Lippold, O. *Zu den Schildformen der Alten*, Munich, 1908.

- *Die griechischen Leichtbewaffenten bis auf Alexander*, Jena, 1910 (Lippold, *Leicht*).

Lock, R. *The Army of Alexander the Great*, unpublished PhD. thesis, Leeds University, 1984.

- "The Macedonian Army Assembly in the Time of Alexander the Great", *Classical Philology*, 72, 1977, pp.91-107.

Lonis, R. *Les usages de la Guerre entre Grecs et Barbares*, Paris, 1969.

Lorimer, H.L. "The Hoplite Phalanx", *Annual of the British School at Athens*, 42, 1942, pp.76ff.

- *Homer and the Monuments*, London, 1950.

Loring, W. "Some ancient routes in the Peloponnese", *Journal of Hellenic Studies*, 15, 1895, pp.25ff, pl.I-III.

de Lort-Serignan, A. *La Phalange: etude philologique et tactique sur les formations d'armées des Grecs dans l'antiquité et sur leur langue militaire*, Paris, 1880 (Lort-Serignan).

Maecher-Helfen, O.J. *World of the Huns*, Berkeley, 1973.

Mac-Kay, P.A. "'Procopius' De Aedificiis and the topography of the battle of Thermopylae", *American Journal of Archaeology*, 67, 1963, pp.241-55.

Mac-Shane, R.B. *The Foreign Policy of the Attalids of Pergamum*, Illinois, 1964.

Mahaffy, J.P. *The Empire of the Ptolemies*, London, 1895.

- "The army of Ptolemy IV at Raphia", *Hermathena*, XXIV, 1898, p.140.

Manti, P.A. "The cavalry sarissa", *Ancient World*, 8, 1983, pp.73- 80.

Margovsky, I. "The survey at Raphia", *Archaeological News*, (Israelil Hebrew), 3, 1960, pp.60ff.

Markle, M.M. "The Macedonian sarissa, spear and related armour", *American Journal of Archaeology*, 81, 1977, p.323.

- "Use of the sarisa by Philip and Alexander of Macedon", *American Journal of Archeaology*, 82, 1978, p.483.

- "Weapons from the Cemetary at Vergina and Alexander's Army", *Megas Alexandros*, pp.234-267, pls. I-VIII, Thessalonica, 1980.

- "Macedonian arms and tactics under Alexander the Great", in N. Yalouris (Ed.), *The Search for Alexander*, Washington, 1980.

Marsden, F.W. *The Campaign of Gaugamela*, Liverpool, 1964.

-*Greek and Roman Artillery*, two volumes, *Historical Development* and *Technical Treatises*, Oxford, 1969 and 1971.

- "Macedonian military machinery and its designers under Philip and Alexander", *Archaia Makedonia*, 2, 1977 (Thessalonike), pp.211-23.

Marshall, J. *Taxilia*, Cambridge, 1951.

Martin, A. *Les Cavaliers Athéniens*, Paris, 1886 (Martin, *Cav. Ath*).

Martin, T.R. "Diodorus on Philip II and Thessaly in the 350's B.C.", *Classical Philology*, 76, 1981, pp.188ff.

Mason, H. *Greek Terms for Roman Institutions*, Toronto, 1974.

May, E.C. & Stadler, G.P. *Ancient and Medieval Warfare*, West Point, 1980.

McCartney, E.S. *Warfare by Land and Sea*, Michigan, 1961.

McDowell, R. H. *Stamped and Inscribed Objects from Seleucia*, Michigan, 1935

McLeod, W.E. "Archery in ancient Greece.", *Greek Heritage*, 1, part 3, 1964, pp.102ff.

- "The range of the ancient bow", *Phoenix*, 19, 1965, pp.1-14.

- "The bowshot and Marathon", *Journal of Hellenic Studies*, 90 1970, pp.197ff.

Medinger, P. "L'Arc Turquois at les Archers Parthes à la Bataille de Carrhes", *Revue Archeologique*, 2, 6th Ser., 1933, pp.227- 234.

Meiggs, R. & Lewis, D. M. *A Selection of Greek Inscriptions*, Oxford, 1969.

Meloni, P. "Perseo.", *Annali dell' Università di Cagliari*, 20, 1953, pp.394ff.

Mendel, G. *Catalogue des sculptures des musées Ottomans*, Vol. I, 1912 (Mendel, *Catal. Sculpt. Mus. Ott*).

Merker, M.J. "The ancient kingdom of Paionia", *Balkan Studies*, VI, 1965, p.166.

Meuric-Davis, E.L.B. "Elephant tactics", *Classical Quarterly*, n.s. 1, 1951, pp.153-5.

Meyer, E. "Die Schlacht von Pydna", *Berlin S.B.*, 1909, pp.794-8 (Kl.Schriften [Halle 1924] II 483 seq.)

Meyer, P.M. *Das Heerwesen der Ptolemäer und Römer in Ägypten*, Berlin, 1899 (Meyer).

- *Die Ptolemäer und Römer in Ägypten*, Leipzig, 1900.

Michiner, H. *Oriental Coins and their Values*, London, 1982.

Millar, H.F. "The Practical and Economic Background of the Greek Mercenary Explosion.", *Greece and Rome*, 31, no.2, 1983, pp.153-60.

Milne, J.G. "Egyptian nationalism under Greek and Roman rule", *Journal of Egyptian Archaeology*, 14, 1928, pp.226-34.

Milns, R.D. "Alexander's Macedonian cavalry and DS XVII.14.4", *Journal of Hellenic Studies*, 86, 1966, p.166.

- "Alexander's seventh phalanx battalion", *Greek, Roman and Byzantine Studies*, 7, 1966, pp.159ff.

- "Alexander's pursuit of Darius", *Historia*, 15, 1966, pp.256ff.

- "Philip II and the Hypaspists", *Historia*, 16, 1967, p.509.

- "The Hypaspists of Alexander III", *Historia*, 16 1967, p.186.

- "The Army of Alexander the Great", *Entretiens Fondation Hardt*, 22, 1967, Geneva, pp.89ff.

- *Alexander the Great*, London, 1968.

Minns, E.H. *Skythians and Greeks*, Cambridge, 1913.

- "Parchments of the Parthian Period from Avroman in Kurdistan" *Journal of Hellenic Studies*, 35, 1915, pp.22-65.

Momigliano, A. "Re e popolo in Macedonia prima di Alessadro Magno.", *Athenaeum*, 13, 1935, pp.3-21.

Mørkholm, O. *Antiochus IV of Syria*, Copenhagen, 1966.

Neumann, C. "A note on Alexander's march rates", *Historia*, 20, 1971, pp.196-8

Newell, E.T. *The Coinage of the Eastern Seleucid Mints*, New York, 1938.

- *The Coinage of the Western Seleucid Mints*, New York, 1941.

Nikolitisis, N.K. *The Battle of the Granicus*, Stockholm, 1974.

Nosworthy, B. *The Anatomy of Victory, Battle Tactics 1689-1763*, New York, 1990.

Oman, C. *A History of the Art of War in the Sixteenth Century*, Reprint, London, 1987.

*Oxford Classical Dictionary, The*, 2nd Ed., Oxford, 1970.

Parke, H.W. *Greek Mercenary Soldiers from the Earliest Times to the Battle of Ipsos*, Oxford, 1933 (Parke, *Mercs*).

Pauly, A., Wissowa, G. & Kroll, W. *Real-Encyclopadie der classischen Altertumswissenschaft* (*RE*).

Payne-Gallway, R. *The Crossbow*, London, 1903.

Pedech, P. "Deux campagnes d'Antiochus III chez Polybe", *Revue des études anciennes*, 60, 1958, pp.67-81.

- *La Méthode Historique de Polybe*, Paris, 1964.

Perdrizet, P. "Steles peintes de Sidon.", *Revue des études anciennes*, 4th series, III, 1904, pp.234ff.

- *Les terrescuites grecques d'Egypt de la collection Fouquet*, Nancy, 1921 (Perdrizet, *Terrescuites*).

Peremans, W. "Notes sur la bataille de Raphia", *Aegyptus*, 36, 1951, pp.214-22.

Peters, J.P & Theirsch H., *Painted Tombs of the Necropolis of Marisa*, 1905.

Petsos, P.M. "ΑΝΑΣΚΑΦΗ ΑΡΧΑΙΟΥ ΝΕΚΡΟΤΑΦΕΙΟΥ ΒΕΡΓΙΝΗΣ", *ΑΡΧΑΙΟΛΟΓΙΚΟΝ ΔΕΛΤΙΟΝ*, 17, Α, 1961-2, pp.218-88, pl.146a.

Plassant, A. "Les archers d'Athénes", *Revue des études grecques*, 26, 1913, pp.151-213.

Plaumann, G. *RE*, 8, 1913, 1374-1379, sv. "*ἑταῖροι*" (Plaumann).

Polyaenus, *Polyaenus' Strategems of War; from an original by Dr. Shepherd*, 2nd ed, London, 1796.

Pottier, E. & Reinach, S. "Fouilles dans la Necropole de Myrina.", *Bulletin de correspondance hellenique*, 9,1885, pp.435-96.

Pounder, R.L. "A Hellenistic arsenal in Athens.", *Hesperia*, 52, 1983, pp.233ff., pls. 49 + 50.

Powell, T.G.E. "Some implications of chariotry", I.L. Forster and L. Adcock (eds.), *Culture and Enviroment: Essays in honour of Sir Cyril Fox*, London, 1963, pp.153-169.

Preaux, C. *L'économie royale des Lagides*, Brussels, 1939.

- *Le monde hellenistique*, 2 vols., Paris, 1978.

Pritchett, W.K. "Some observations on Chaeronea", *American Journal of Archaeology*, 62, 1958, pp.307ff.

- *Studies in Ancient Greek Topography*, 5 Vols., Berkeley, 1965-9 (Pritchett, *Topography*).

- *The Greek State at War*, Vols. 1-5, Berkeley, 1971-85.

Radet, G. "Ipsos et la bataille de 301, *Revue des études anciennes*, 38, 1936, pp.263ff.

Ramsey, W.M. "Military operations on the north front of mount Taurus - IV: the campaigns of 320 and 319 B.C.", *Journal of Hellenic Studies*, 43, 1929, pp.1-10.

Rattenbury, R.M. "An ancient armoured force", *Classical Review*, 56, 1942, pp.113-6.

Reinach, A.J. "L'Origin du Pilum" *Revue archéologique*, 4th Ser., 10, 1907, pp.125-136 and 226-244.

- "Les mercenaries et les colonies militaires de Pergame", *Revue archéologique*, 12, 1908, pp.174-218, 364-89,; 13, 1909, pp.102-19, 363-77.

- "La Frise du Monument de Paul-Emile a Delphes" *Bulletin de correspondance hellenique*. 34, 1910, pp.433ff.

- "Trophies Macedoniens" *Revue des études grecques*, 26, 1913, pp.329-395.

- "Å propos de deux steles de Pagasai", *Revue archéologique*, 21, 1913, pp.19ff.

Reinach, S. "Elephant foulant aux pieds un Galate", *Bulletin de correspondance hellenique*, 9, 1885, pp.485-93.

- "Les Gaulois dans l'art antique", *Revue archéologique*, 3rd ser., 13, 1889, pp.317-352.

Robert, L. "Notes d'épigraphie Hellenistique", *Bulletin de correspondance hellenique*, 59, 1935, pp.421ff.

- "Etudes épigraphiques", *Bulletin de correspondance hellenique*, 60, 1936, pp.190ff.

- "Inscriptions Seleucides de Phrygie et d'Iran", *Hellenica*, 7, 1947, pp.5-29.

Robertson, M. "The Boscoreale figure painting", *Journal of Roman Studies*, 45, 1955, pp.58-67 , pl.XII-XIII.

Robinson, C.A. "Alexander's plans", *American Journal of Philology*, 61, 1940, pp.402-412.

Robinson, D.M. *Excavations at Olynthus, Volume X*, Baltimore, 1941.

Robinson, H.R. *The Armour of Imperial Rome*, London, 1975.

- *Oriental Armour*, London, 1967.

Romane, P. "Alexander's Siege of Tyre", *Ancient World*, 16, 1987, pp.79-90.

Rostovtzeff, M.I. *Iranians and Greeks in South Russia*, Oxford, 1922.

- "Dura and the problem of Parthian art", *Yale Classical Studies*, V, 1935, pp.157ff.

- & Bellinger, A.R., Hopkins, C., Welles, C.B., *The Excavations at Dura-Europos: Preliminary Report of the 6th Season of Work at Dura-Europos, October 1932-March 1933*, New Haven, 1936.

- *Social and Economic History of the Hellenistic World*, 3 Vols., Oxford, 1941 (Rostovtzeff, *SEHHW*).

- "The Parthian Shot", *American Journal of Archaeology*, 47, 1943, pp.174-187.

Roussel, P. "Un règlement militaire de l'epoque Macedonienne", *Revue archéologique*, 6, ser.3, 1934, pp.39-47.

- "Decret des Peliganes de Laodicée-sur-mer", *Syria*, 23, 1942-3, pp.21-32.

Rubin, B. "Die Entstehung der Kataphraktenreiterei im Lichte der chorezmischen Ausgrabungen", *Historia*, 4, 1955, pp.264-283.

Rufus Fears, J. "The date of Q. Curtius Rufus, *Classical Philology*, 71, 1976, pp.222-223.

Rumpf, A. "Κρανός Βουκέφαλος", *Abhandl. D. Preuss. Akademie der wissen*, Berlin, 98, 1943, pp.1-17.

Sachs, A.J. & Wiseman, D.J. "A Babylonian kinglist of the Hellenistic period", *Iraq*, 16.2, 1954, pp.202-12.

Salmon, J. "Political hoplites?", *Journal of Hellenic Studies*, 97, 1977, pp.87-122.

Sarre, F. *Die Kunst des Alten Persien*, Berlin, 1922.

Schalit, A. "A letter of Antiochus III to Zeuxis regarding the establishment of Jewish military colonies in Phrygia and Lydia", *Jewish Quarterly Review*, 49, 1960, pp.289-313.

Schaumberg, A. *Bogen und Bogenschutze bei den Griechen*, Nurnberg, 1910.

Schroeder, B. "Thrakische Helm", *Jahrbuch des deutsches archäologisches Institut*, 27, 1912, p.317.

Schubart, W. *Quaestiones de rebus militaribus, quales fuerint in regno Largidorum*, Diss. Breslau, 1900.

Schulten, A. "Die Makedonischen Militarcolonien", *Hermes*, 32, 1897, pp.523-67.

Schwarke, *RE*, 'Granicus', 2, 912.

Scullard, H.H. *A History of the Roman World from 753 to 146 B.C.*, London, 1935.

- *The Elephant in the Greek and Roman World*, London, 1974.

Sealey, R. *A History of the Greek City States*, Berkeley, 1976.

Sekunda, N.V. *Cretan Archers: Cretan Mercenaries abroad c.750-27 B.C. in*

*their Cretan and International Setting*, unpublished PhD thesis, Manchester, 1981.

- "The rhompaia, a Thracian weapon of the Hellenistic period.", *Ancient Bulgaria*, Nottigham, 1983, pp.275-288.

- *The Army of Alexander the Great*, London, 1984.

Seitz, H, *Blankwaffen I*, Braunshung, 1963.

Seltman, C. *Greek Coins*, London, 1933.

Serge, A. "Frammenti dei πΛΟΥΤΟΙ di Cratino in papiri della Società Italiana", *Bulletin de la société royale d'Archéologie D'Alexandrie*, 29, 1934, pp.249ff.

Shimron, B. *Late Sparta*, New York, 1972.

Simpson, R.H. *Antigonus One Eye - a study*, unpublished PhD., Durham, 1951.

- "Antigonus, Polyperchon and the Macedonian regency", *Historia*, 6, 1957, pp.371-3.

Smail, R.C. *Crusading Warfare 1097-1193*, Cambridge, 1956.

Smith, A.H. "Some recently acquired reliefs in the British Museum", *Journal of Hellenic Studies*, 36, 1916, pp.81ff.

Snodgrass, A.M. "Carian armourers: the growth of a tradition." *Journal of Hellenic Studies*, 84, 1964, pp.107-18.

- *Early Greek Armour and Weapons*, Edinburgh, 1964 (Snodgrass,

*EGA*).

- "The Hoplite Reform and History", *Journal of Hellenic Studies*, 85, 1965, pp.110-22.

- *Arms and Armour of the Greeks*, London, 1967 (Snodgrass, *AAG*).

Sokolov, G. *Antique Art on the Northern Black Sea Coast*, Leningrad, 1974.

Soltau, W. "Die Manipulartaktik", *Hermes Zeitschrift*, 20, pp.262- 267.

Soteriades, G. "Das Schlachtfeld von Charonea und der Grabhugel der Macedonen", *Mitteilungen des deutschen archaologischen Instituts*, 28, 1903, pp.301-330.

- "ΤΟ ΠΕΔΟΝ ΤΗΣ ΕΝ ΣΕΛΛΑΣΙΑ ΜΑΧΗΣ", *Bulletin de correspondance hellenique*, 34, 1910, 5-57.

Spendel, A. *Untersuchungen zum Heerwesen der Diadochen*, Breslau, 1915 (Spendel, *Unter*).

Sprackhoff, *Ebert reallexicon der Vorgeschichte*, sv. "Panzer", p.33, pl.13a.

Stadter, P.A. "Xenophon in Arrian's Cynegeticus", *Greek, Roman and Byzantine Studies*, 17, 1976, pp.157-67.

- "The Ars Tactica of Arrian: Tradition and Originality", *Classical Philology*, 72, 1977, pp.117-128.

Stark, F. "Alexander's minor campaigns in Turkey", *Geographic Journal*, 122, 1956, pp.294-305.

- "Alexander's march from Miletus to Phrygia", *Journal of Hellenic*

*Studies*, 78, 1958, pp.102-120.

Stary, P.F. "Ursprung aus Ansbreitung der einsenzeitlichen ovalshielde mit spindel fosmigen Schildbuchel.", *Germania*, 59, 1981, pp.287-306.

Stein, A. *On Alexander's Track to the Indus*, London, 1929.

- "An archaelogical tour of the ancient Persis", *Geography Journal*, 86, 1935, pp.496ff.

Steinwender, Th. "der Polybian Gefechtsabstand", *Hermes*, 1909, pp.179-97.

Sulimirski, T. "Les archers à cheval, cavaleries legere des anciens", *Revue International d'Histoire Militaire*, 3, 1951/2, pp.447-61.

*Supplementum epigraphicum Graecum* (*SEG*).

Tarn, W.W. *Antigonus Gonatus*, Oxford, 1913.

- "The First Syrian War", *Journal of Hellenic Studies*, 46, 1926, pp.156-62.

- "The Proposed New Date for Ipsus", *Classical Review*, 40, 1926, pp.13-15.

- "Cassander's army in 316", *Journal of Hellenic Studies*, 51, 1931, pp.307ff.

- *Hellenistic Naval and Military Developments*, Cambridge, 1930 (Tarn, *HMND*).

- *The Greeks in Bactria and India*, Cambridge, 1938 (Tarn, *Bactria*).

pp.124-135.

- "Two Notes on Seleucid History" *Journal of Hellenic Studies*, 60, 1940, pp.84-9.

- Review, F.W. Walbank, *Philip V of Macedon*, *Journal of Roman Studies*, 31, 1941, pp.172-3.

- *Alexander the Great*, 2 Vols., Cambridge, 1948 (Tarn, *Alex*).

- & Griffith, G.T. *Hellenistic Civilisation*, London, 1952.

Tcherikover, V. *Die hellenistchen Stadtergrundungen von Alexander dem Grossen bis auf die Romerzeit*, Leipzig, 1927.

Urban, R. "Das heer des Kleomenes bei Sellasia.", *Chiron*, Band 3, 1973, pp.754ff.

Van't Dack, E. "L'armee Lagide de 55 a 30 av. J-C", *Journal of Juristic Papyrology*, 19. 1983, pp.77ff.

Veith, G. "Der Kavalleriekampf in der schlacht am Hydaspes", *Klio*, 8, 1908, pp.131ff.

Vermes, G. *The Dead Sea Scrolls in English*, London, 1962.

Vernant, J.P. (ed.) *Problemes de la guerre en Grece ancienne*, Paris, 1968.

Vigneron, P. *Le Cheval dans l'antiquite Greco-Romaine*, 2 Vols., Nancy, 1968.

Walbank, F.W. *Philip V of Macedon*, Cambridge, 1940 (Walbank, *Philip*).

- *A Historical Commentary of Polybios*, 3 Vols., Oxford, 1957- 1979

- "Alexander's plans", *Journal of Hellenic Studies*, 49. 1939, pp.124-135.

- "Two Notes on Seleucid History" *Journal of Hellenic Studies*, 60, 1940, pp.84-9.

- Review, F.W. Walbank, *Philip V of Macedon*, *Journal of Roman Studies*, 31, 1941, pp.172-3.

- *Alexander the Great*, 2 Vols., Cambridge, 1948 (Tarn, *Alex*).

- & Griffith, G.T. *Hellenistic Civilisation*, London, 1952.

Tcherikover, V. *Die hellenistischen Stadtergrundungen von Alexander des Grossen bis auf die Römerzeit*, Leipzig, 1927.

Urban, R. "Das Heer des Kleomenes bei Sellasia.", *Chiron*, Band 3, 1973, pp.754ff.

Van't Dack, E. "L'armée Lagide de 55 a 30 av. J-C", *Journal of Juristic Papyrology*, 19. 1983, pp.77ff.

Veith, G. "Der Kavalleriekampf in der Schlacht am Hydaspes", *Klio*, 8, 1908, pp.131ff.

Vermes, G. *The Dead Sea Scrolls in English*, London, 1962.

Vernant, J.P. (ed.) *Problemes de la guerre en Grèce ancienne*, Paris, 1968.

Vigneron, P. *Le Cheval dans l'antiquite Greco-Romaine*, 2 Vols., Nancy, 1968.

Walbank, F.W. *Philip V of Macedon*, Cambridge, 1940 (Walbank, *Philip*).

- *A Historical Commentary of Polybius*, 3 Vols., Oxford, 1957- 1979 (Walbank, *Polybius*).

Walsh, P.G. "The negligent historian: 'howlers' in Livy", *Greece and Rome*, 5, 1958, pp. 84-5.

Warry, J. *Warfare in the Classical World*, London, 1980.

Webster, G. *The Roman Imperial Army*, 3rd Ed., London, 1981.

Welles, C.B. "New texts from the chancery of Philip V of Macedon and the problem of the digamma", *American Journal of Archaeology*, 42, 1938, pp.248-254

- "Gallic Mercenaries in the Chremonidean War" *Klio*, 52, 1970, pp.477-490.

Westlake, H.D. "The aftermath of the Lamian War", *Classical Review*, 63, 1949, pp.87ff.

- *Essays on the Greek Historians and Greek History*, Manchester, 1969.

Whatley, N. "On the possibility of reconstructing Marathon and other ancient battles", *Journal of Hellenic Studies*, 84, 1964, pp.119-134.

White, L. *Medieval Technology and Social Change*, Oxford, 1962.

Wilcken, U. *Alexander the Great*, London, 1932 (Wilcken, *Alex*).

Will, E. *Histoire politique du monde hellénistique (323-30 av. J- C)*, 2 Vols. Nancy, 1967 (II); 1979 (I, ed.2); 1982 (II, ed.2).

Winter, F. *Das Alexander Mosaic aus Pompeii*, Strassburg, 1909.

Wirth, G. "Zur grossen Schlacht des Eumenes 322", *Klio*, 46, 1965, pp.283ff.

Wolters, P. "Ein Denkmal der Partherkriege", *Mitteilungen des deutschen archaol. Instituts*, 28, 1903, pp.19ff.

Wright, H.B. *The Campaign of Plataea*, Diss. New Haven, 1904.

Wuilleuimier, P. *Tarante*, Paris, 1939.

Zahn, R. "Makedonischer schild, Makedonischer becher schuchthand." *Studien zarvorund Fruch Geschichte Batae*, 1940, pp.48-72.